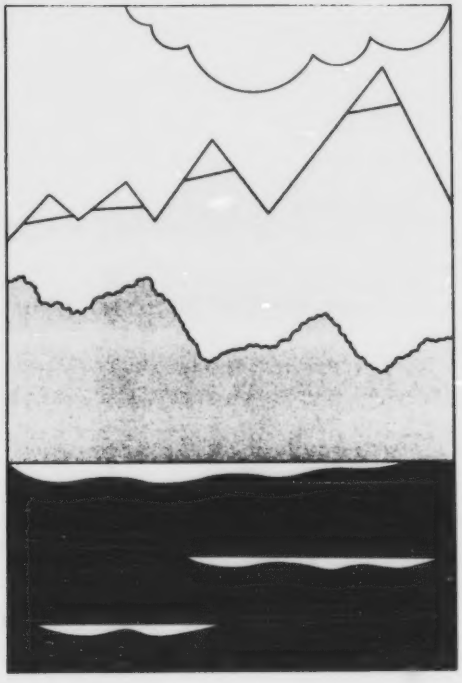
Alberta Environment's Commitment



Submission to the
Alberta-Pacific Environmental Impact Assessment
Review Board Public Hearing
December 14, 1989
Prosperity, Alberta

Alberta
ENVIRONMENT

91-06960/

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SUMMARY

Alberta Environment welcomes the opportunity to contribute to the public review and assessment process here in Prosperity. We are also pleased that the federal government and the government of the Northwest Territories have participated in these hearings, as have several municipal governments.

As you know, employees from Alberta Environment, John Shires, Bob Stone and Bryan Kemper have attended your hearings. I hope they have been helpful to the Board and to the public. We in the department now have a much better understanding of the concerns of Prosperity and other Alberta and Northwest Territories communities. We are here today to discuss these concerns.

The size of our group and the information being tabled reflect Alberta's commitment to a comprehensive environmental impact assessment process for pulp mill development and all other industrial initiatives which affect our environment. We also believe it is essential that our experienced professional staff, in particular those involved in water management, environmental protection and research activities, brief the Review Board.

Before introducing our team, I would like to describe the basis of Alberta's approach to environmental management.

The Government of Alberta is deeply committed to the protection and wise use of our environment. It is obvious to all of us that our quality of life depends on the state of our water, air and land, both now and for the future. Today we will talk about baseline data, emissions and cumulative impacts.

We also recognize our responsibility to other Canadians and strive to prevent and minimize the effects of environmental incidents and decisions beyond our own borders.

Our actions and decisions are based on science, the application of new technology, increased monitoring and reporting. These will be dealt with in detail by our scientists.

We believe that protection of the environment is a shared responsibility, it involves all of us. This means we each have a role to play, from the individual who uses a car wisely and participates in recycling programs, to

governments who regulate and monitor the environment, to industries such as the pulp mill industry whose operations are based on resource use. We will also be talking to you today about the way in which all sectors participate in environmental decision-making.

Finally, both the Environment Minister, the Honourable Ralph Klein and the Premier, the Honourable Don Getty, have stated that pulp mill projects will only be approved if they are environmentally acceptable.

I would like to briefly review our current situation and also talk about the future.

Albertans have always placed a high priority on their environment. Let me give you a few examples.

* For many years Albertans have had strict laws dealing with the treatment of sewage. Major investments in municipal infrastructure now ensure protection of our waterways.

* The development of strict standards and a commitment to strong monitoring means that Albertans are

supplied with high quality drinking water. Alberta's standards for drinking water have been used as a model by many other jurisdictions.

* Alberta was the first government in Canada to establish a Department of the Environment. Alberta Environment's committed and experienced staff now comprise more than 1,000 full-time persons.

* A world-class environmental research facility has been in operation at Vegreville for a decade.

* Effective public involvement resulted in the establishment of a comprehensive special waste management system and the construction and operation of the special waste treatment facility at Swan Hills. Events in this country and abroad have proven the wisdom of this decision.

More recently, we have set up a separate Pollution Control Division which not only includes scientists and engineers, but also staff with professional legal and enforcement experience. This was a direct result of a recent public review on environmental enforcement.

We continue to bolster our applied research and analytical capabilities. At the Alberta Environmental Centre, a number of studies have been conducted and several special research programs related to pulp mills and, in particular, Adsorbable Organic Halides (AOX), are ongoing.

Other initiatives such as the HELP program - Help End Landfill Pollution and MUST - Management of Underground Storage Tanks, demonstrate not only our continued commitment to environmental protection, but our determination to prevent environmental problems with forethought and action.

Looking to the future, and to the matters before this Review Board, it is important to note that our standards for pulp mills are very stringent. They were developed after a lengthy examination of technology and effluent treatment systems throughout North America and Europe.

The Government of Alberta is also committed to sustainable development which means that both the resources and the environment must be managed for the long term. This Review Board represents our very real attempt to put this theory into action.

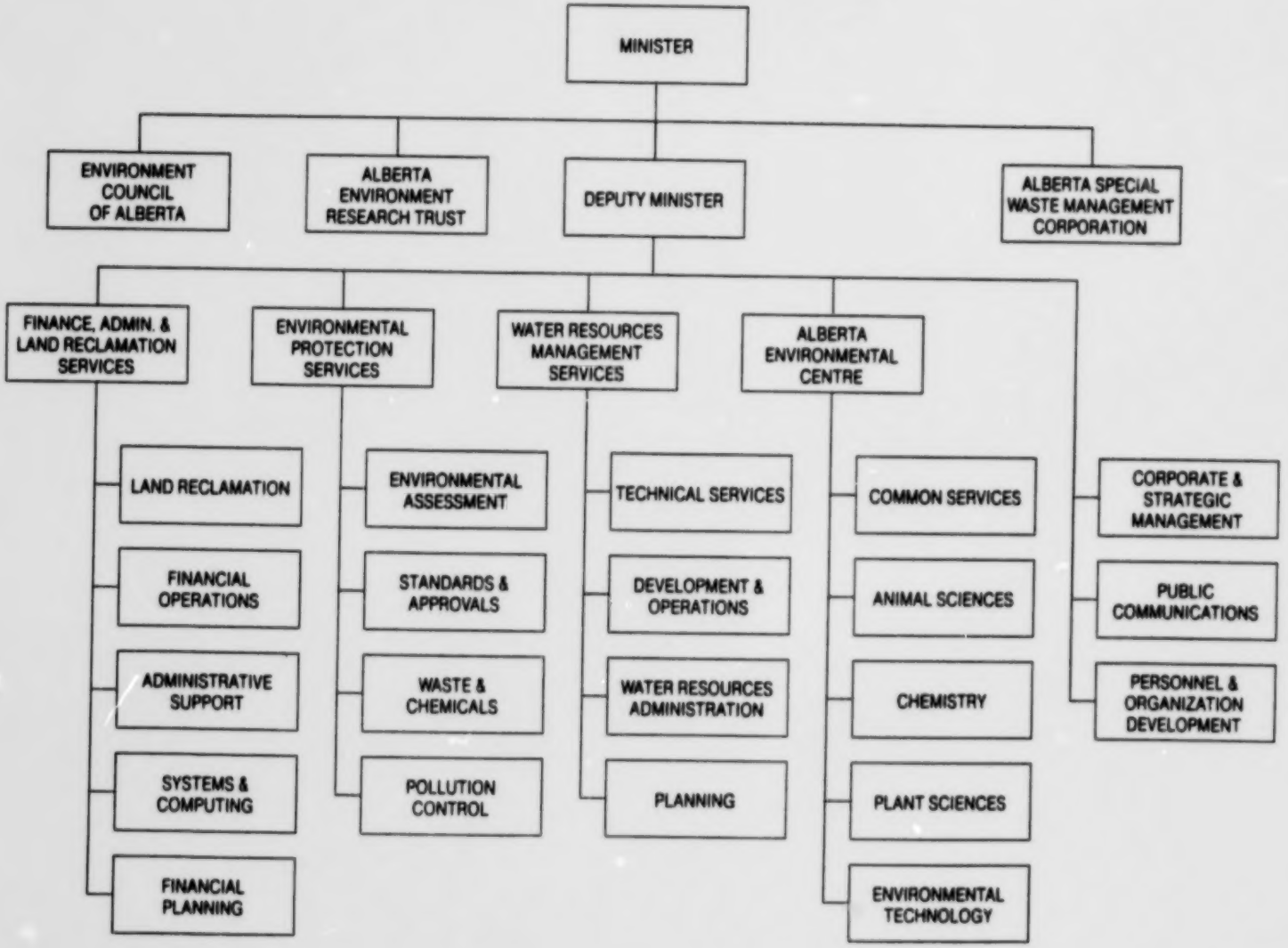
Mr. Klein has made several key commitments which will put into practice our continuing emphasis on the protection and wise use of our environment. These include:

* a comprehensive recycling program, developed through a public hearing process, which will be introduced in early 1990.

* new legislation to further strengthen and protect the environment in recognition of the fact that managing the environment is an evolving process.

Mr. Chairman, members of the Review Board, Ladies and Gentlemen, I hope my remarks have served as a brief introduction to Alberta Environment. This chart outlines our organizational structure and composition for your information. At this time, I would like to introduce the members of the Alberta Environment team and outline our presentation today in terms of Alberta Environment's commitment -- To Sound Water Management - To Public Involvement - To Maintaining a Leading Edge - To Sustainable Development and To Protection.

ALBERTA ENVIRONMENT



Sound Water Management in Alberta

Alberta is committed to ensuring sound water management through our expertise, experience, and a comprehensive planning program. We also recognize our responsibility to all water users, both within our boundaries and in other provinces and territories.

Public Involvement

We need two-way communication in everything from legislation to land-use planning. Our record of public involvement is a good one and it's one we intend to add to in the future.

Maintaining a Leading Edge

We have set stringent standards for drinking water, air quality and land use among other areas. Our scientific efforts in the past, currently and in the future are helping us stay in the forefront of research, particularly in relation to the pulp industry.

Sustainable Development

Alberta recognizes the importance of ensuring that development and the environment are managed for the long term. Sustainable development is an integral element of our monitoring and standard-setting policies.

Protection

Alberta Environment has moved to tighten its enforcement standards and to formalize a clearcut policy on enforcement.

Our presentation will conclude by addressing some of the outstanding issues and concerns surrounding the Environmental Impact Assessment conducted by Alberta Pacific.

ALBERTA ENVIRONMENT'S COMMITMENT

TO SOUND WATER MANAGEMENT IN ALBERTA

SOUND WATER MANAGEMENT IN ALBERTA

Good morning ladies and gentlemen - I appreciate the opportunity to make a presentation on water management to the Review Board and to participate in a public review process which will be the vanguard for future project assessments.

Pulp mills need water - for their internal process and to discharge mill effluents.

The existing and proposed mills in Alberta, as you know, are located on rivers that are part of a much larger transboundary river system.

I would like to discuss briefly Alberta Environment's approach and policy toward the sound management of such rivers.

To achieve understanding and credibility we cannot just talk about what we promise to do in the future - we must talk about what has been our past performance - this applies to pulp mill companies as it does to sound water management.

Water is one of Alberta's most important natural resources. Many large river systems originate in Alberta's eastern slopes - other rivers originate outside Alberta - pass through the province and flow north. Alberta is both an upstream province and a downstream province in respect of large transboundary rivers. This is an important distinction and definitely influences our approach to sound water management.

Alberta has a good performance record in the joint and cooperative management of inter-provincial river systems.

Our water management policy and our approach to transboundary rivers are based on the following principles:

* The water in such rivers is a common heritage and a shared resource, the value of which must be recognized by all.

* The water resources in our common river systems will be managed and protected for multiple use and sustained yield.

* The water in large rivers is mobile and knows no jurisdictional boundaries, consequently, management

of these rivers demands inter-governmental cooperation.

* Joint management of an inter-jurisdictional river requires full consultation and open sharing of all information with upstream and downstream partners - this includes all water quantity and quality data, and information on any developments that could affect the river.

* The water resources must be managed using a river basin approach. That is, the entire river basin is considered as a unit for planning and management purposes.

Using these principles and the cooperative approach, Alberta has for example, participated with Saskatchewan and Manitoba in the joint management of the inter-provincial eastern flowing rivers - like the North/South Saskatchewan Rivers - which originate in Alberta and flow through Saskatchewan and Manitoba into the Hudson Bay.

Alberta is a party to the Prairie Provinces Water

Apportionment Agreement signed in 1969 and is a member of the Prairie Provinces' Water Board which administers the agreement and manages the eastern flowing rivers. This is a successful arrangement with a 20 year performance record and a fine model for the management of inter-jurisdictional rivers.

In the case of eastern flowing rivers Alberta, as the upstream province, has the added responsibility of being the custodian of the headwaters and the watersheds of these rivers. Alberta's water managers have discharged that responsibility wisely and with due diligence. We believe our downstream neighbors in Saskatchewan and Manitoba would agree, given the 20 year history of the Master Apportionment Agreement, not a single transboundary water issue has had to be referred to the courts or the political level for resolution.

The philosophy and approach used on the Saskatchewan-Nelson River System can be, and is being, applied to the Mackenzie River Basin system.

The Mackenzie River Basin system is the largest in Canada, covering parts of the Yukon, B.C., Alberta, Saskatchewan and the N.W.T. and, of course, including the Peace and Athabasca Rivers. It has enormous nature and diversity.

The importance and value of this immense river system was first officially recognized by governments in 1977. The Mackenzie River Basin Committee was established by a "Memorandum of Understanding". The Committee has representation from all of the governments in the Basin and includes the federal government. It was established in recognition that cooperation would be essential to ensure the wise use of the Basins water resources.

This Committee is charged with exchanging information on water, intended developments in the Mackenzie River Basin; determining the need for and carrying out, joint basin studies and establishing monitoring stations.

In 1978, Alberta joined with the other Mackenzie Basin partners to undertake a four year study to gather information and increase our understanding of the water and rivers in the Mackenzie River system. In 1981, 10 volumes of baseline data and information were completed on the rivers in the system. This demonstrates the cooperative attitudes and efforts that already exist among the jurisdictions in the river basin.

The study treated the basin as a whole and in addition to

the information gathered, the main conclusion was: there must be ongoing cooperation among the six governments in managing water, the one shared resource.

Since 1981 - a number of other water related studies have been done, including (a) continued work on the Peace-Athabasca Delta (b) the Mackenzie River Delta Studies and (c) continued work on setting up monitoring stations. All of this has been managed by the Mackenzie River Basin Committee.

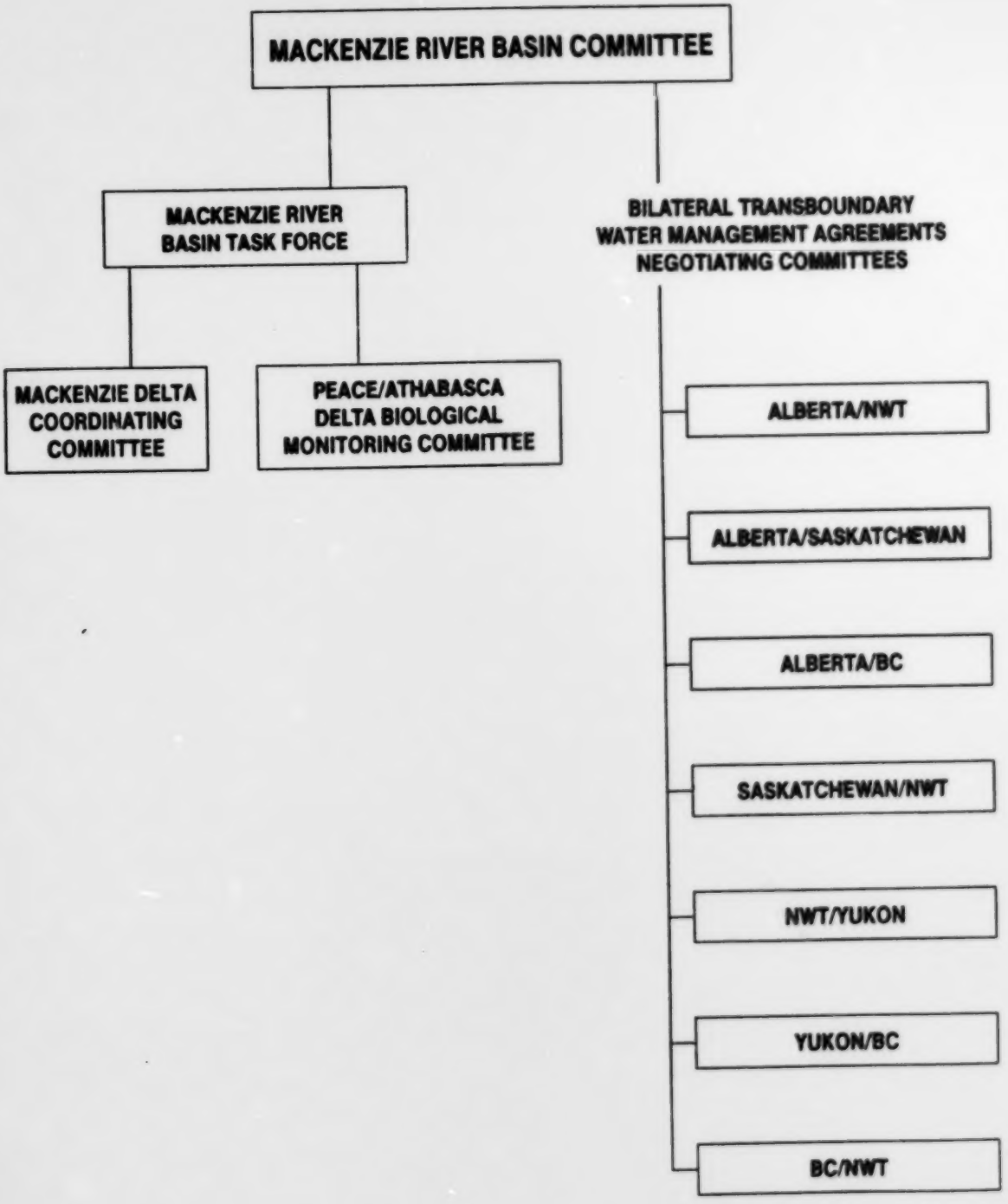
Alberta Environment has been instrumental in establishing inter-jurisdictional negotiating committees to develop a transboundary water agreement. These committees are in place for Alberta/B.C., Alberta/NWT and Alberta/Saskatchewan. Similarly, bilateral committees have been established to come to agreement with all other transboundary parties in the Mackenzie River Basin. To support the negotiations, a number of studies have been commissioned and are underway. These include analyses of river flows, existing and projected water requirements (both consumptive and instream), water quality and fishery resources.

MACKENZIE RIVER BASIN

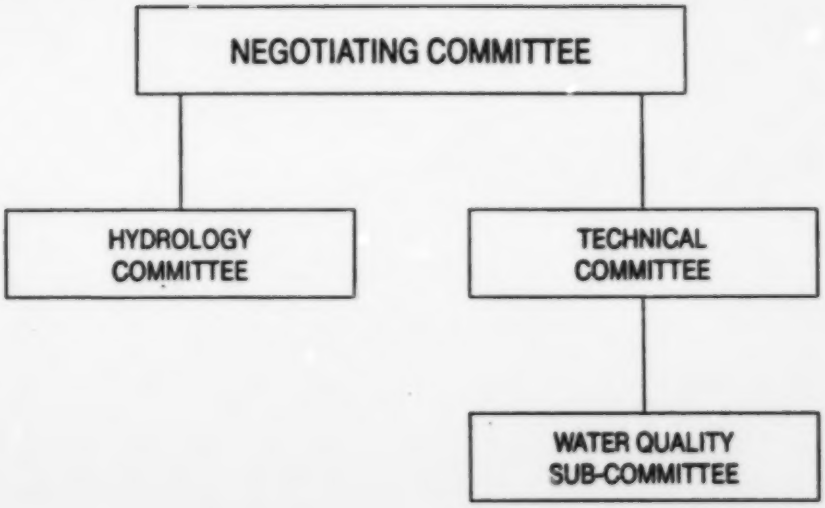
MACKENZIE RIVER BASIN COMMITTEE
STUDY REPORT

RECOMMENDATION #1

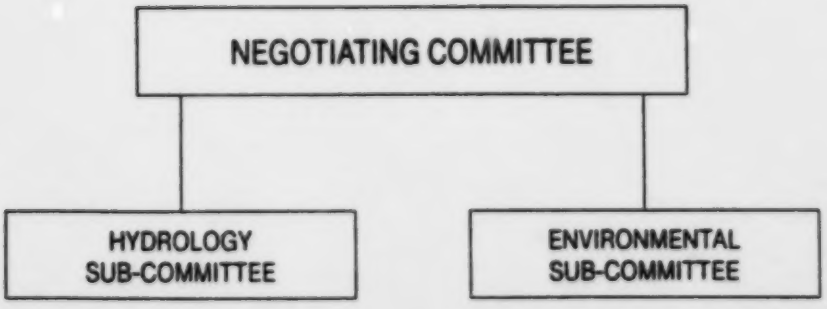
IT IS RECOMMENDED THAT THE JURISDICTIONS AT AN EARLY DATE CONCLUDE AN AGREEMENT THROUGH WHICH TRANS-BOUNDARY WATER MANAGEMENT ISSUES SUCH AS MINIMUM FLOWS, FLOW REGULATION, AND WATER QUALITY CAN BE ADDRESSED AT JURISDICTIONAL BOUNDARY CROSSING POINTS IN THE MACKENZIE RIVER BASIN, AND WHICH ESTABLISHES A PERMANENT BOARD TO IMPLEMENT THE PROVISIONS OF THE AGREEMENT.


MACKENZIE RIVER BASIN COMMITTEE
MACKENZIE RIVER BASIN TASK FORCE
BILATERAL TRANSBOUNDARY WATER MANAGEMENT AGREEMENTS NEGOTIATING COMMITTEES
MACKENZIE DELTA COORDINATING COMMITTEE
PEACE/ATHABASCA DELTA BIOLOGICAL MONITORING COMMITTEE
ALBERTA/NWT
ALBERTA/SASKATCHEWAN
ALBERTA/BC
SASKATCHEWAN/NWT
NWT/YUKON
YUKON/BC
BC/NWT

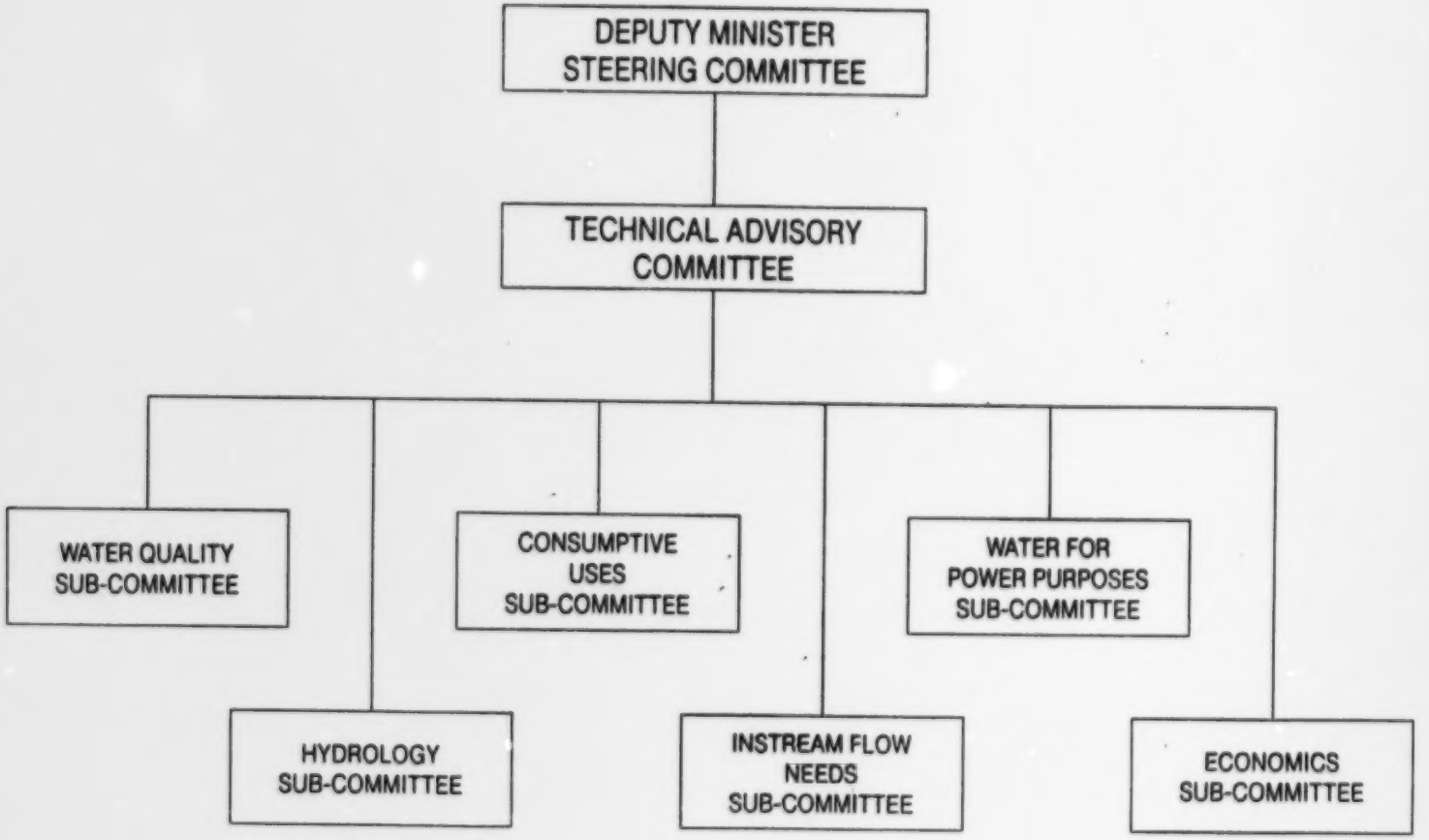
ALBERTA/NWT BILATERAL TRANSBOUNDARY NEGOTIATIONS



ALBERTA/SASKATCHEWAN BILATERAL TRANSBOUNDARY NEGOTIATIONS



B.C./ALBERTA BILATERAL TRANSBOUNDARY NEGOTIATIONS



STUDIES UNDERWAY OR COMPLETED:

ALBERTA-B.C. NEGOTIATIONS

1. Water quality data consolidation and review (Summer 1990)
2. Assessment of existing and future consumptive water uses (Completed)
3. Development of naturalized flows for the Peace River - 1938 to present (Dec 1989)
4. Peace River Fisheries Inventory (Alberta) (Completed)
5. Definition of instream flow requirements for the Peace River (Summer 1990)
6. Economic analysis of implications of possible transboundary water management agreement (Summer 1990)
7. Assessment of the water requirements for power generation purposes on the Peace River (Spring 1990)

ALBERTA-NWT NEGOTIATIONS

1. Water Quality Data Inventory Report – Slave and Hay Rivers (Completed)
2. Transborder Naturalized Monthly Mean Flows – Slave, Hay, Little Buffalo, Buffalo and Salt Rivers (Completed)
3. Slave River Basin Overview (Completed)
4. Assessment of existing and future consumptive water uses – Hay and Slave basins (Completed)
5. Monitoring Programs (Ongoing)
   - Slave and Hay water quality monitoring
   - Mercury analysis in fish – Slave and Hay Rivers

Alberta has a good record of cooperation and action in the management of inter-provincial/territorial river systems. The philosophy, approach and experience used in the past will continue to be used in the Mackenzie River system. This approach will work because it is based on a true and honest partnership among neighbors sharing a vital resource - water.

I will now call on Dr. Bruce MacLock, Director of Alberta Environment's Planning Division to present a brief overview of the Peace and Athabasca Rivers.

OVERVIEW OF THE PEACE ATHABASCA AND SLAVE RIVERS

It is important to place the Peace, Athabasca and Slave Rivers in context within the Mackenzie Basin; therefore we have some key water quantity and quality characteristics of the three rivers are included.

BASIN CHARACTERISTICS

Athabasca River

The Athabasca River contributes about 25% of the flow of

the Slave River, the remaining 75% is contributed by the Peace River. Of the flow of the Mackenzie River at its mouth, Alberta's Peace and Athabasca Rivers contribute about 25%.

The Athabasca begins in the main ranges of the Rocky Mountains. Its headwaters are fed by the Columbia Icefields. It falls 750m from the Rockies to the Peace-Athabasca Delta and Lake Athabasca.

The Athabasca is the longest (1280 km) river in Alberta. For most of its length, it is ice covered for about three months each winter. The ice cover is broken at the site of warm water discharges such as pulp mills and at the Grand Rapids just before Fort McMurray. The heavy turbulence of these rapids keeps the river clear of ice and provides a major reoxygenation source, particularly in the winter months.

Three water quality zones have been identified in the river. These include:

* Foothills Reach: Jasper Park boundary to Fort Assiniboine. Characteristics: high alkalinity and

hardness, relatively low suspended solids. Point effluent sources: Hinton combined effluent (Weldwood pulp mill and Town of Hinton sewage effluent), Millar Western CTMP pulp mill (1989), Whitecourt sewage treatment plant. Water quality effects during winter: lower dissolved oxygen, higher concentration phenolic compounds, colour, odour, phosphorus, manganese. Spring/summer: Flows are much larger and the effect of point effluents is hardly noticeable.

* Intermediate Reach: Fort Assiniboine to Fort McMurray. This is a transition zone between the cold, clear waters of the foothills reach and the warmer more turbid waters downstream. Characteristics: alkalinity/hardness decrease in this reach, suspended solids, particulate metals, nutrients, carbon contents increase. Major tributaries: Clearwater, Lesser Slave rivers. Point sources: Sewage treatment plants at Slave Lake, Town of Athabasca.

* Downstream Reach: Fort McMurray to Lake Athabasca. In this reach the river is slower moving and more

turbid. Characteristics: hardness and alkalinity reduced relative to upstream reach, suspended solids high due to upstream reaches and tributaries, nitrogen and phosphorus content high, correlated to suspended solid which are from naturally occurring watershed runoff, bank erosion, scour. Point source discharges: Suncor process effluent, Fort McMurray sewage treatment plant (its effect on water quality is minor).

Peace River

The Peace River flows 1650 km from its headwaters in the Rocky Mountain Trench to its confluence with the Slave River.

The river is also frozen for approximately three months of the year except for open water reaches below the Bennett Dam and at the Vermilion chutes near Fort Vermilion.

Since the Bennett dam was built, spring floods have been about 50% of their natural levels; but winter flows are about three times what they were before the dam was built.

Point sources: four pulp mills, two at MacKenzie, B.C., one at Taylor, B.C. and one at Grande Prairie (MacKenzie pulp mills discharge into the upper Williston Reservoir).

The Peace River is well oxygenated along its entire length, no impact of existing pulp mills is noticeable on dissolved oxygen, water is relatively fresh, TDS 100-125 mg/L (total dissolved solids), slightly alkaline, dominant ions, calcium and bicarbonate, during high flows the Peace River is very turbid.

Effects of the Fibreco Mill at Taylor B.C., appear to be small to not discernible on water quality in the Peace River.

Peace/Athabasca Delta

The Peace/Athabasca Delta is a very special part of Alberta. The panel has been introduced to the area in Fort Chipewyan and Fort Smith. The delta has a number of unique characteristics:

* It is the most biologically productive area in Alberta.

* It is a World Heritage site.

* The flow of water in the delta is complex and has been studied in detail. It is difficult to trace precisely where the waters of Lake Athabasca and the the Peace and Athabasca rivers meet, mix and flood.

The basic flow patterns of the delta are controlled by water levels in the Peace River. When the Peace is in flood (traditionally about 20 days a year) the flow from the Peace dams the normal flow from Lake Athabasca to the Slave River. During this period, Lake Athabasca waters, including water from the Athabasca River flow into the delta and flood it.

For the balance of the year, waters from Lake Athabasca flow unimpeded northward into the Slave River.

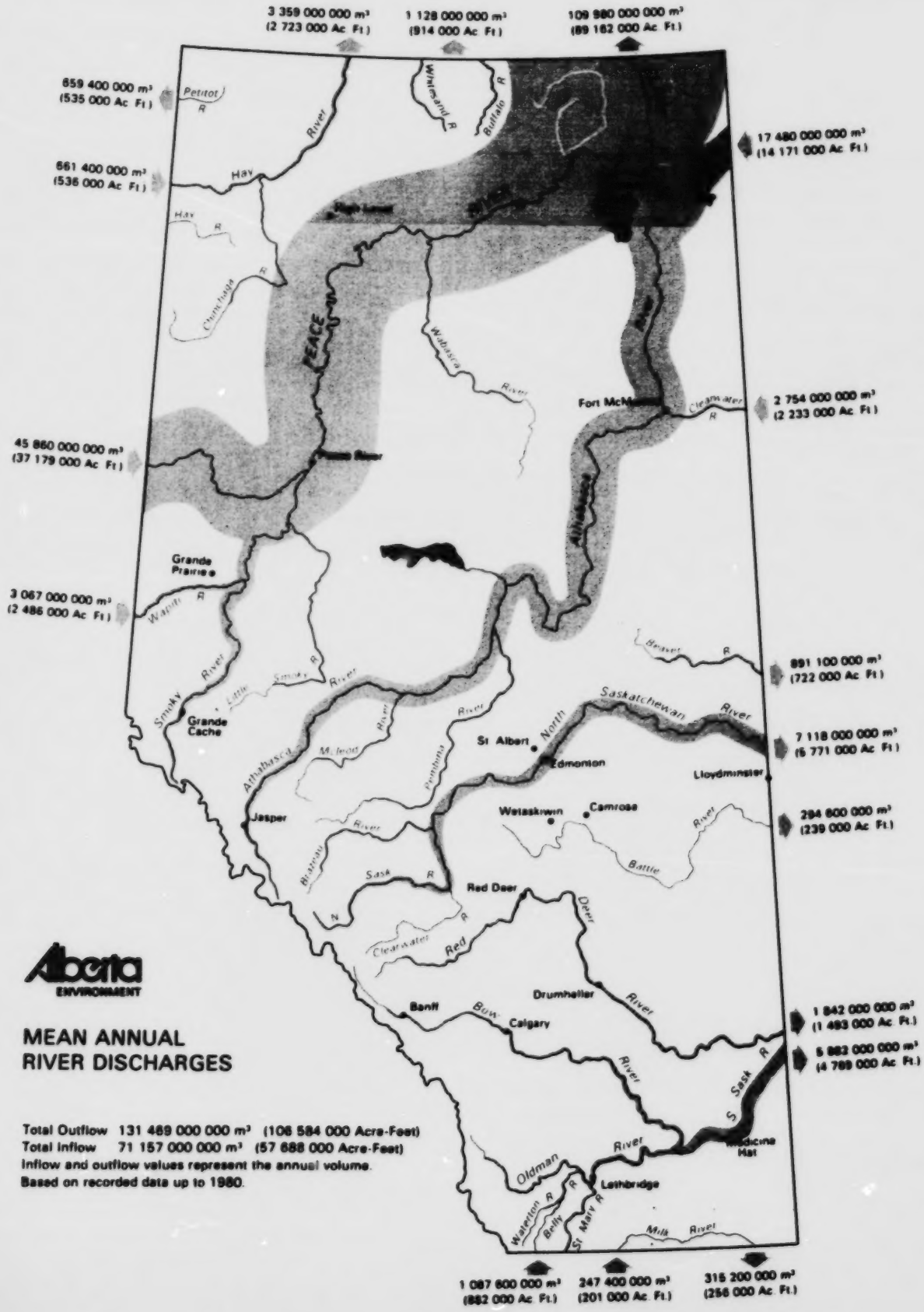
Slave River

Slave River drains almost 2/3 of Alberta's land area and parts of B.C. and Saskatchewan. The Slave River itself is relatively short with a length of only 420 km, of which approximately 200 km are located in Alberta.

MACKENZIE RIVER BASIN

Figure 2.12

Mackenzie River System



Alberta
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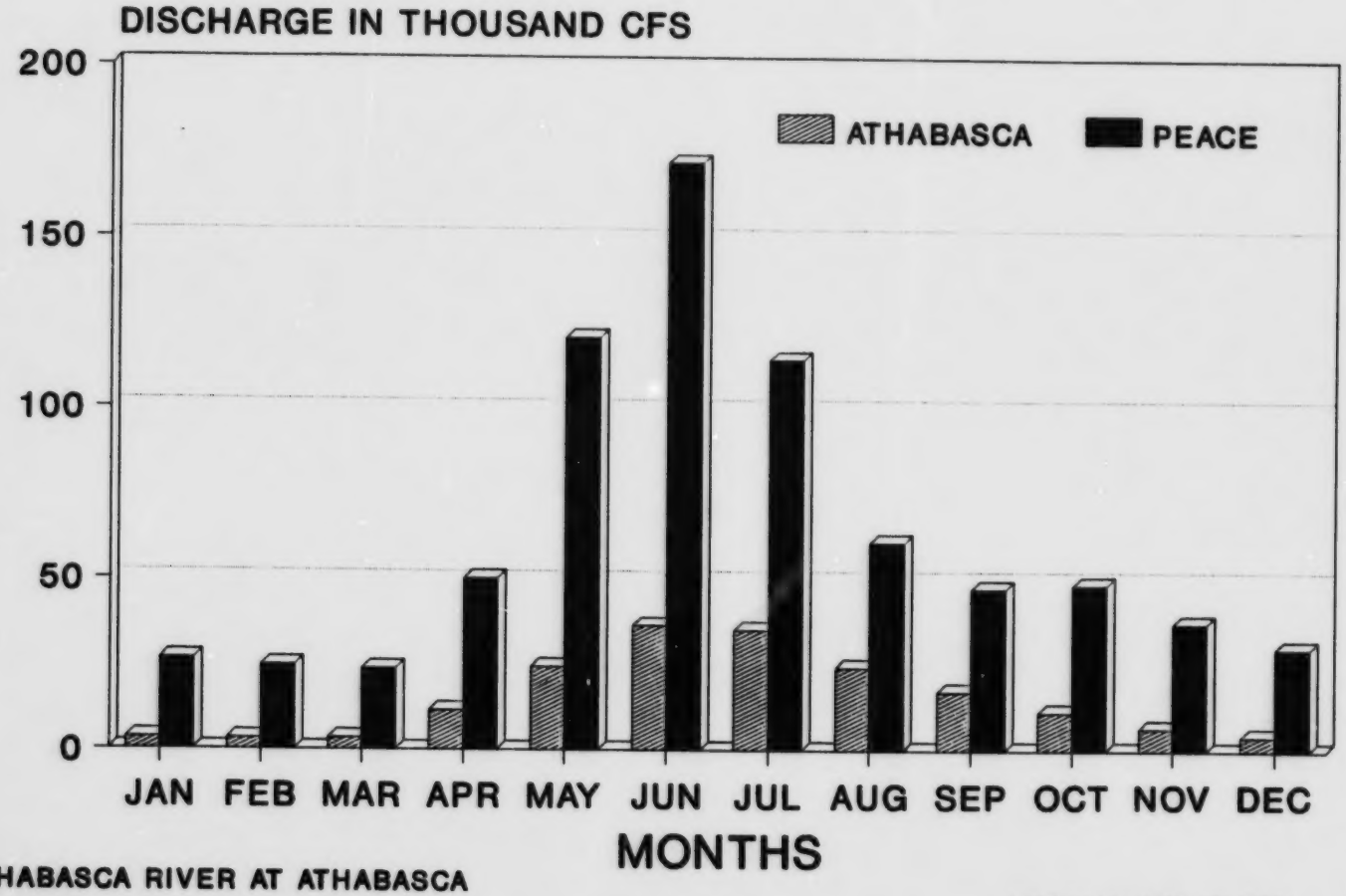
MEAN ANNUAL RIVER DISCHARGES

Total Outflow 131 489 000 000 m³ (106 584 000 Acre-Feet)
Total Inflow 71 157 000 000 m³ (57 688 000 Acre-Feet)
Inflow and outflow values represent the annual volume.
Based on recorded data up to 1980.

Water Resources Management Services — Revised 08/82/5m"

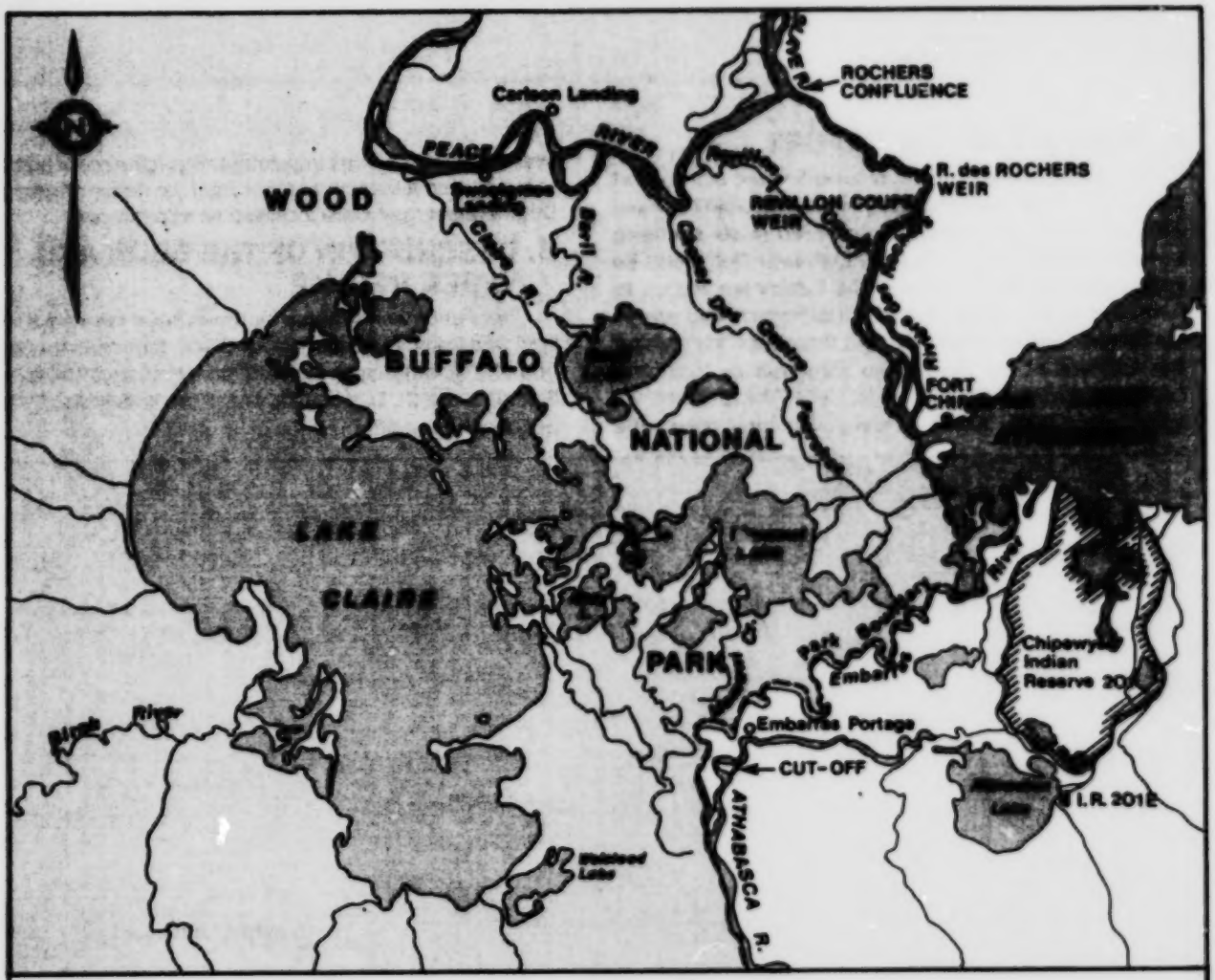
NORTHERN ALBERTA RIVERS
AVERAGE MONTHLY DISCHARGE IN CFS



ATHABASCA RIVER AT ATHABASCA

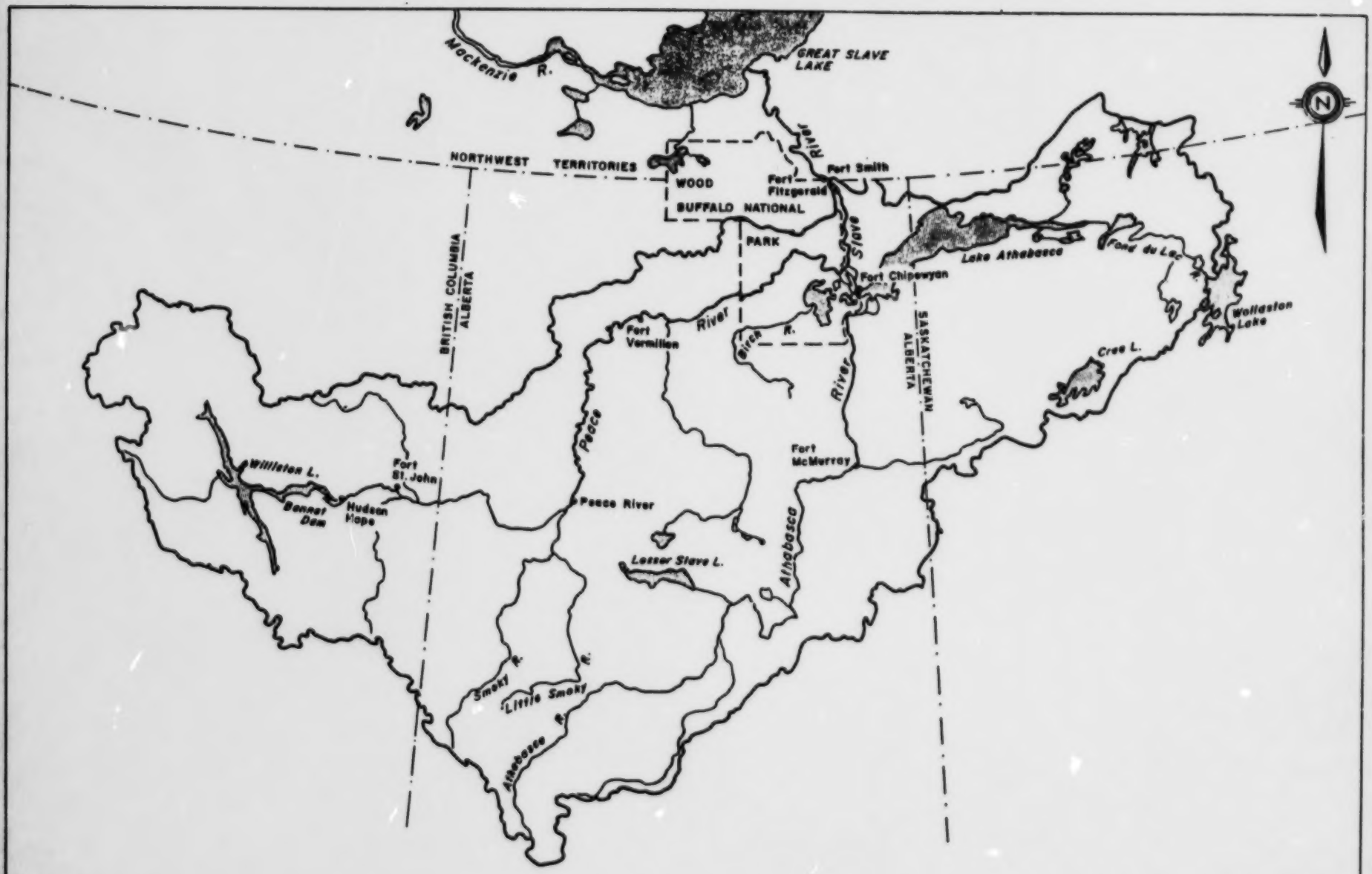
PEACE RIVER AT PEACE RIVER REGULATED SINCE 1967

BASED ON DATA TO 1988
CFS • CUBIC FEET PER SECOND



PEACE - ATHABASCA DELTA

FIGURE 2



Alberta
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SLAVE RIVER BASIN

ALBERTA ENVIRONMENT'S COMMITMENT

TO PUBLIC INVOLVEMENT

The Peace River accounts for 60% of the Slave River flow at the NWT border and it exerts the greatest influence on the quality of Slave River waters. For this reason the Slave River is relatively turbid. Its waters are relatively alkaline, water quality is generally good, effecting the quality of its major tributaries (Peace/Athabasca River), alkalinity reflects tributaries and geological characteristics of sedimentary basin.

The Riviere des Rochers which carries the flows of the Athabasca River and drainage from Lake Athabasca and the delta accounts for 40% of Slave River flow at the NWT border. Quality is similar to the Athabasca River since the majority of its flow volume originates from the river.

PUBLIC INVOLVEMENT

Alberta Environment believes that every Albertan should have the opportunity to understand and provide input to decisions affecting our environment. As noted previously, we need two-way communication in everything from legislation to land-use planning.

Environmental management is a shared responsibility which

requires meaningful dialogue between agencies like ourselves and the public.

In this commitment to dialogue, not only is our record a long one, it is a good one.

Encouraging and facilitating public involvement in environmental decision making has been a corner stone of our operation since 1971. Effective consultation has benefits for everyone. Through public involvement, citizens become more aware of the variety of actors that contribute to the quality of our environment, and they better understand the range of options that must be considered when decisions affecting the environment are made.

We are deeply committed to achieving the protection, improvement and wise use of our environment now and into the future. In its 19 years of existence, Alberta Environment has maintained a public involvement philosophy which stresses:

- two way communication and information exchange
- early involvement is the planning process

- opportunity for stakeholder involvement
- equal access to information
- ongoing dialogue through all phases of a program or study

Alberta Environment's approach to public involvement has been to treat each issue as a unique situation. Some examples are:

- River Basin Planning
- Siting process for the Alberta Special Waste Treatment Centre in Swan Hills
- Environmental Impact Process (EIA) - Public Involvement at a Community Based Level
- Numerous Community Liaison and Local Advisory Committees
- Public Notice and Review of Licence Applications under the Clean Air Act, the Clean Water Act and Water Resources Act.

RIVER BASIN PLANNING

River basin planning with full public involvement has been a commitment of Alberta Environment since 1971. Wide

variations in scale and scope have been pursued from the South Saskatchewan basin in the southern half of Alberta to the smaller watersheds of the Peace River District. We have learned the wisdom of close working partnerships with local authorities on the matter of public involvement, agricultural land use and its impacts on erosion control and water management.

We also have considerable experience in working with very concerned stakeholders in such extremely sensitive basins as the Highwood south of Calgary in matters of minimum instream flows for fish, recreation and aesthetic uses in the face of strong competing demands for water from the agricultural sector.

A more detailed description of Alberta Environment's experience with river basin planning involvement is outlined later.

SWAN HILLS

The siting program for the Alberta Special Waste Treatment Centre provides an excellent example of how a commitment to public consultation has put Alberta in the lead, internationally, in the area of environmental protection.

The opening, on September 11, 1987, of the Alberta Special Waste Treatment Centre is a milestone without precedent in North America. Nowhere else on this continent is there a fully integrated facility which is capable of treating and disposing of all known wastes in one location, and nowhere else in North America has a society been more involved in identifying the problem of managing hazardous wastes, and in working towards a solution.

The successful siting of the treatment centre is a first in North America where the usual reaction from local citizens has been "not in my backyard." By using open dialogue with the public and establishing trust and confidence, the siting process actually resulted in communities competing for the project.

Two basic criteria for the siting program evolved through the public consultation process. These criteria were public acceptance and environmental suitability. Any site which failed to meet both of these requirements was eliminated from consideration. The Swan Hills site was eventually identified as acceptable on both points. All Albertans should be proud of this facility. The fact that we have it in place in Alberta is a direct result of a commitment to public consultation.

ENVIRONMENTAL IMPACT PROCESS

The Environmental Impact Assessment (EIA) process in Alberta reflects a strong commitment to public involvement through a community based approach to identifying and assessing impacts associated with industrial development. This ALPAC hearing process itself demonstrates the commitment and desire to share with the widest possible group of affected publics, (including NWT residents) the task of assessing the environmental impacts of the proposed ALPAC mill. The past six weeks have been a great deal of hard work for everyone, but we think this in itself speaks of the solid record.

LIAISON COMMITTEES

Numerous community liaison and local advisory committees exist today such as the Cold Lake Advisory Committee and the Fort McKay Interface Committee. These committees have evolved as a direct result of Alberta Environment's experience in the energy sector. These committees are good examples of effective public participation and we are now using this same approach for pulp mill development in Alberta.

PUBLIC NOTICE

Public input is now sought in the license and permitting process through public notice and review of licence applications under the Water Resources Act and we are moving to use the same approach under the Clean Air Act and Clean Water Act.

These are just a few examples of how Alberta Environment is attempting to enhance our consultation with Albertans and to encourage greater public awareness and understanding of environmental issues. As Alberta moves into the 1990s, Albertans will continue to have every opportunity to understand and provide input to decisions affecting our environment. Alberta Environment will make every effort to involve Albertans in protecting our environment and to facilitate public participation through information sharing, education and consultation.

ALBERTA'S RIVER BASIN PLANNING PROGRAM

The following section reviews our river basin planning process and where the public fits into that process.

Basic principles and approach:

Alberta's river basin planning process involves the following principles:

River basin planning is the cornerstone of Alberta's approach to water resources management.

We have to first consider the most limiting resource of Alberta's north, water, and plan accordingly.

In the southern part of the province issues are water quantity related. Only 13.5% of Alberta's water flows through its most populated region; the rest flows into the Mackenzie basin.

The river basin is the unit for planning and management.

The behavior of the water in the downstream parts of any basin is dependent on the sum of the activities upstream; a unique ecosystem.

To recognize these unique systems, Alberta maintains planning staff for the Peace, Athabasca, North Saskatchewan, Red Deer, Bow and Oldman basins.

The approach is comprehensive and multidisciplinary.

Our basin approach is comprehensive in that it includes:

1) A review identification of issues and collection of baseline information.

2) Priorize problems and identify possible alternatives.

3) Assessment of desirable alternative(s).

4) Recommendations considered by government.

The expertise of many disciplines; biologists, engineers, agrologists, foresters, economists are involved in this process.

The planning process is dynamic and ongoing.

More than just developing a plan, we maintain a planning process to meet the constantly changing circumstances.

The river basin planning process involves all partners in water resources management as well as local authorities.

When the planning process is initiated key stakeholders that have an interest in the wise management of water are identified; the farmer who uses the water for his cattle, the fisherman, the irrigator, a municipality that needs a domestic water supply, including downstream jurisdictions.

Involvement of the public is critical.

The public has to participate in the development of the plan and take responsibility. After all, environmental management is a shared responsibility.

The planning for wise water management includes quality and quantity.

WHAT WE HAVE DONE

Basin planning in the north is proceeding, following the comprehensive approach previously outlined.

It has been in the last 10 years that the Alberta public has expressed a greater interest in a comprehensive planning approach in the Peace and Athabasca basins.

Some of the activities with which we have been involved on the Athabasca have included:

* Stream flow and water quality data collection and analysis.

* Identification of key issues.

* An assessment of current water demand including withdrawals and instream flows.

* Development of predictive water quantity and quality models.

HOW WE ARE GOING TO PROCEED

* The Mackenzie River Basin Study, completed in 1981, represented the start of Alberta's basin planning in northern basins.

* Alberta will ensure a comprehensive, coordinated approach to water management planning in the Mackenzie basin.

* Main ongoing activities to be intensified and accelerated include:

  - Maintenance of a public involvement process.

  - Intensification of stream flow, water quality and aquatic ecology data collection and analysis programs.

  - Identification of water management implications of long term agricultural and forestry land use practices, energy developments and municipal industrial growth, and

  - Bilateral negotiations with neighboring jurisdictions.

PUBLIC INVOLVEMENT PRINCIPLE

ALBERTANS WILL HAVE EVERY OPPORTUNITY TO UNDERSTAND AND PROVIDE INPUT TO DECISIONS AFFECTING OUR ENVIRONMENT.

TO ACHIEVE THIS THE ALBERTA GOVERNMENT:

1) ENCOURAGES AND FACILITATES PUBLIC PARTICIPATION THROUGH INFORMATION SHARING, EDUCATION AND CONSULTATION.

2) MAKES EVERY EFFORT TO HELP ALBERTANS UNDERSTAND THAT THEY ARE PART OF THE ENVIRONMENT AND INVOLVES THEM IN ENVIRONMENTAL PROTECTION AND ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT

PUBLIC INVOLVEMENT OBJECTIVES

- ENCOURAGE PUBLIC INPUT AND PARTICIPATION THROUGHOUT THE STUDY PROCESS
- ENSURE THE PLANNING PROCESS ADDRESSES PUBLIC CONCERN
- PROVIDE AN OPPORTUNITY FOR PUBLIC REVIEW OF PROPOSED MANAGEMENT ALTERNATIVES

ALBERTA ENVIRONMENT EXPERIENCE IN PUBLIC INVOLVEMENT

1) RIVER BASIN PLANNING
   -SOUTH SASKATCHEWAN BASIN
   -COLD LAKE BEAVER RIVER
   -INSTREAM FLOW NEEDS PROCESS

2) SITING PROCESS FOR THE ALBERTA SPECIAL WASTE TREATMENT CENTRE IN SWAN HILLS.

3) ENVIRONMENTAL IMPACT PROCESS (EIA)
   -PUBLIC INVOLVEMENT AT A COMMUNITY BASED LEVEL

4) NUMEROUS COMMUNITY LIASON AND LOCAL ADVISORY COMMITTEES.
   ie. FT. McKAY INTERFACE COMMITTEE AND PULPMILL LIAISON COMMITTEES.

5) PUBLIC NOTICE AND REVIEW OF LICENCE APPLICATIONS UNDER CLEAN AIR ACT AND WATER RESOURCES ACT.

PUBLIC INVOLVEMENT EXPERIENCE IN PULP MILLS

1) RIVER BASIN PLANNING FOR PULP MILLS

2) ENVIRONMENTAL IMPACT ASSESSMENTS FOR PULP MILLS

3) PUBLIC INVOLVEMENT IN PERMITS AND LICENCING

4) PUBLIC INVOLVEMENT IN MONITORING

5) THE PUBLIC AS EYES AND EARS IN ENFORCEMENT

EXAMPLES OF PUBLIC INVOLVEMENT IN RIVER BASIN PLANNING

- SOUTH SASKATCHEWAN RIVER BASIN PLANNING PROGRAM
- COLD LAKE/BEAVER RIVER WATER MANAGEMENT STUDY
- INSTREAM FLOW NEEDS

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ALBERTA ENVIRONMENT'S COMMITMENT TO MAINTAINING LEADING EDGE

MAINTAINING THE LEADING EDGE -
PULP MILL-RELATED RESEARCH

INTRODUCTION

This presentation will discuss some of the research and studies related to pulp mills carried out and planned by Alberta Environment. But first, some general information.

Over the past decade, Alberta Environment has carried out a number of applied research, technology development and analytical studies on pulp mills and related activities. These studies have been undertaken in an effort to be on the leading edge of environmental problem solving. Much of the work has been and continues to be carried out by the Alberta Environmental Centre in Vegreville. The Centre is a $100 million institution, with some 300 staff, approved by Cabinet in November 1973, to be a proactive force in interdisciplinary studies on the effect of increased industrial and recreational activities in Alberta. The Centre is a part of Alberta Environment, charged with carrying out environmentally related scientific and technological studies for all Alberta government departments and agencies.

BACKGROUND

Almost since the beginning of pulping there have been concerns about the environmental effects of the operations of pulp mills. Research groups specializing in environmental matters have been established in most countries with a pulping industry. Notable overseas institutions are the Swedish Forest Products Research Laboratory, the Finnish Pulp and Paper Research Institute, the National Council for Air and Stream Improvement in the United States, and the Forest Research Institute in New Zealand.

In Canada, the pulp and paper industry has established the Pulp and Paper Research Institute of Canada (PAPRICAN) which, in addition to its own laboratories in Pointe Claire and Vancouver, has cooperative ventures with McGill University and the University of British Columbia. Other independent Canadian pulp and paper research groups reside at the University of Toronto, Lakehead University, the University of Alberta and the University of Quebec. In addition, the federal government and the provincial governments of Alberta, Ontario and Quebec are carrying out research in this area. Many of these

government efforts are coordinated through the Canadian Council of Ministers of the Environment (CCME). Staff of the Alberta Environmental Centre are either involved in or familiar with these organizations and research efforts.

The most concentrated previous research efforts in Canada occurred between 1970 and 1979 in the federally funded Cooperative Pollution Abatement Research (CPAR) Program. This program, originally established jointly by the federal Fisheries and Forestry, and Energy, Mines and Resources departments, and later supported by Environment Canada, was initiated to provide research to aid in the implementation of the Pulp and Paper Effluent Regulations promulgated in 1971 pursuant to the Federal Fisheries Act. Simultaneously with the spending of the CPAR program research funds, the industry was to install capital pollution abatement facilities. Under the program, the federal government spent $11 million on 164 projects, placed with PAPRICAN, the universities, the pulping companies and consultants. The industry spent some $661 million on capital projects. The federal government also introduced a rapid depreciation program for pollution abatement facilities and a program for providing financial support to companies for the Demonstration of Pollution

Abatement Technology (DPAT). The federal programs were all terminated early, on March 31, 1979.

The results of the federal programs during the 1970s can be summarized by reviewing the nationwide reductions of discharges of BOD_5, suspended solids (SS) and toxicity. Between 1969 and 1980, the average BOD discharges fell from 78 to 47 kg/tonne of production and the SS discharges fell from 49 to 20 kg/tonne of production. During the same period, daily production rose from 54300 to 64848 tonnes. The net reductions in BOD and SS loads to the receiving environment were 28% and 51% respectively nation wide; comparable Alberta figures were 40% and 80% reductions. In 1980, only 32 of Canada's 127 pulp and paper mills were in compliance with the toxicity requirements of the Pulp and Paper Effluent Regulations. Recent information indicates that this number has not changed significantly. Note that in 1980 Alberta mills were in compliance with these toxicity requirements.

Pulp mill-related research, development and analytical activities of the Department can be described in terms of past, present and future studies.

PAST STUDIES

For nearly a decade, the Alberta Environmental Centre has been conducting studies on a wide variety of concerns related to pulp mills.

1. Wapiti River - fish were collected and analyzed for chemical residues, including organic compounds and heavy metals and for tissue changes.

2. Wapiti and Athabasca Rivers - pre-impact toxicological data were obtained, or planned for, via fish collections.

3. Natural and synthetic pulp mill effluents were tested for effects on laboratory rats.

4. Grizzly and black bears were live-trapped, radio-collared and released in the area north of Hinton and Edson. Data on the bears, their habitats and seasonal movements were collected over several years, in preparation for planned future logging in the area.

5. Toxicology of sulfur gases - hydrogen sulfide and

sulfur dioxide - has been studied for several years, to determine standards for emissions and workers' safety with respect to industrial plants.

6. A pulp mill effluents workshop was held in 1983, with provincial and industrial representatives, to determine environmental problems and future research and technology needs.

7. Effluent colour removal processes were reviewed.

8. Procter & Gamble's proposed effluent colour removal process was tested in the laboratory. This was in response to a new licence discharge standard, and to answer concerns from Peace River cattlemen.

9. A model was developed of the P&G effluent treatment lagoon.

10. A model was developed of the P&G chlorine process to remove colour.

11. A battery of toxicity tests, primarily Microtox, were developed for effluent testing.

12. AOX testing, adapted from a Swedish method, was developed and made operational.

13. "Priority pollutant" testing was undertaken on most water bodies of concern.

14. Various rivers, including the Athabasca and Wapiti, were surveyed for methoxychlor, mercury and other chemicals.

ONGOING STUDIES

Work continues to address existing and new concerns. Following are some of the ongoing activities.

1. Research into better methods of AOX and colour removal from effluents and analytical methods development.

2. Toxicity testing, using a battery of tests (acute, chronic, mammalian, and *in vitro*, aquatic, microtox).

3. Priority pollutants analyses.

4. Ultimate BOD (UBOD): determined for use in river models.

5. Methods for organics removal (colour, taste, odour) from drinking water.

Future Plans

Research and technological studies will continue at an increasing rate in future. These include:

1. All of the ongoing studies which will continue.
2. A major planning exercise nearing completion, to determine research priorities and plans for the 1990s. Three priority themes for Environment were identified - effluents, air emissions and solid wastes. Other priorities have been noted, such as occupational health and pulp and paper-making technologies (such as biological bleaching techniques).

CONCLUSION

For many years, Alberta had only two pulp mills and various studies were done on specific problems related to these mills, such as reducing the discharges from them. With a number of new mills in the offing and with new technologies being installed in both new and existing mills, Alberta Environment has decided that a considerable

research and monitoring increase is warranted. We need to evaluate these new mills and new technologies which are proposed or will come along in future years. We plan to be ready and active in carrying out these tasks.

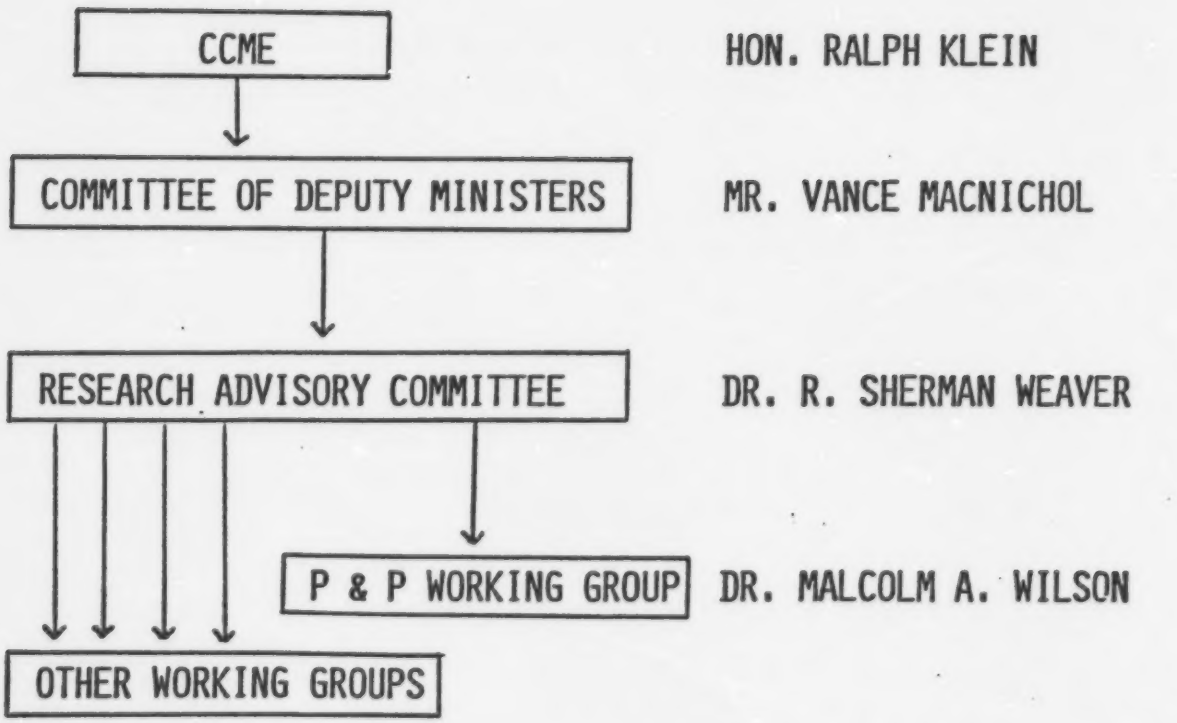
PULP MILL RELATED RESEARCH

NOTABLE RESEARCH INSTITUTIONS

- Swedish Forest Products Research Laboratory
- Finnish Pulp and Paper Research Institute
- National Council for Air and Stream Improvement (USA)
- Forest Research Institute (NZ)

PULP MILL RELATED RESEARCH

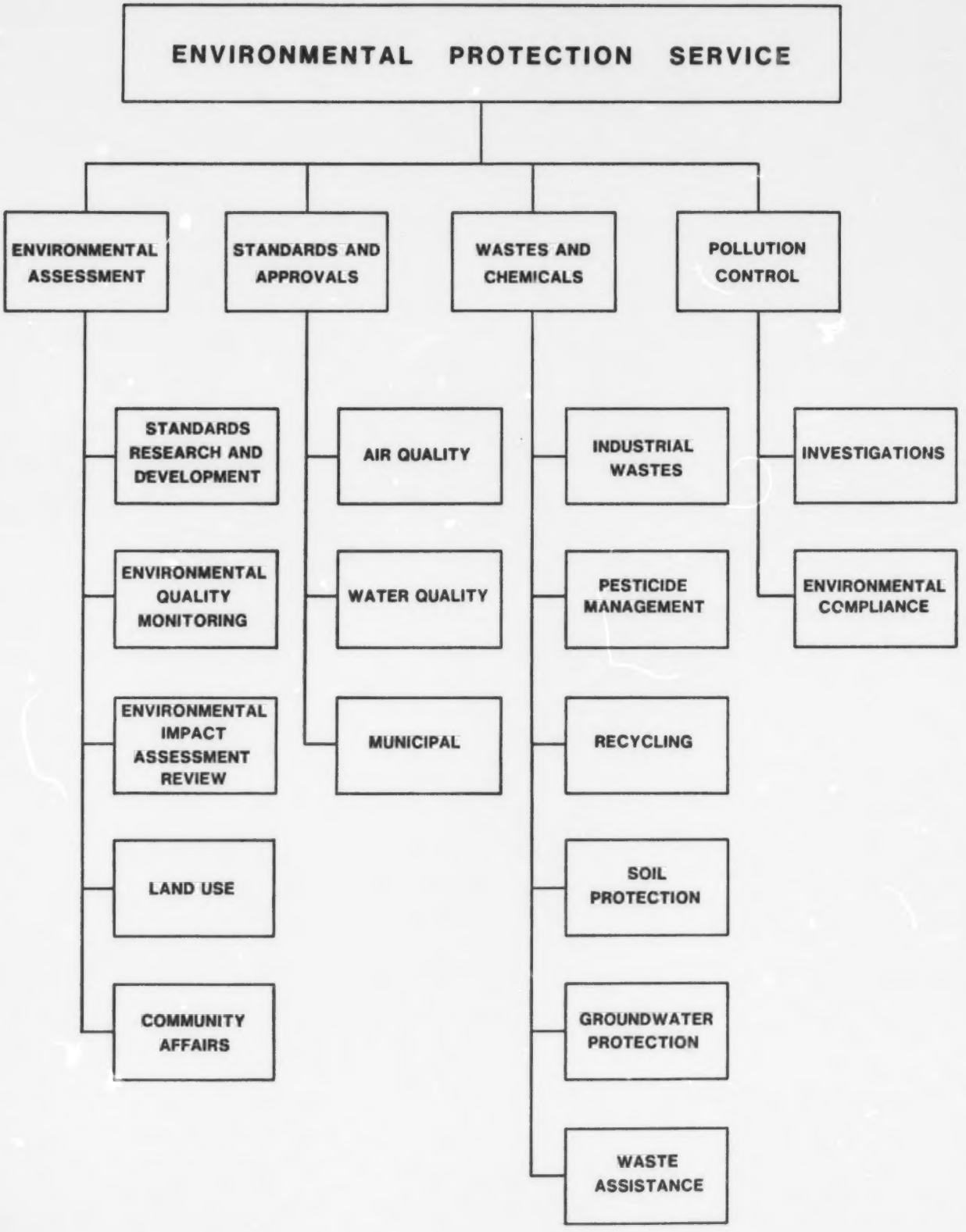
CANADIAN GOVERNMENTAL RESEARCH COORDINATED THROUGH CANADIAN COUNCIL OF MINISTERS OF ENVIRONMENT (CCME)



PULP MILL RELATED RESEARCH

CONCLUDING STATEMENT

TO MAINTAIN ALBERTA'S LEADING EDGE IN ENVIRONMENTAL PROTECTION RELATED TO THE PULP AND PAPER INDUSTRY A RIGOROUS SUPPORTING RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAM WILL BE COORDINATED BY THE ALBERTA ENVIRONMENTAL CENTRE.


ENVIRONMENTAL PROTECTION SERVICE
ENVIRONMENTAL ASSESSMENT
STANDARDS AND APPROVALS
WASTES AND CHEMICALS
POLLUTION CONTROL
STANDARDS RESEARCH AND DEVELOPMENT
ENVIRONMENTAL QUALITY MONITORING
ENVIRONMENTAL IMPACT ASSESSMENT REVIEW
LAND USE
COMMUNITY AFFAIRS
AIR QUALITY
WATER QUALITY
MUNICIPAL
INDUSTRIAL WASTES
PESTICIDE MANAGEMENT
RECYCLING
SOIL PROTECTION
GROUNDWATER PROTECTION
WASTE ASSISTANCE
INVESTIGATIONS
ENVIRONMENTAL COMPLIANCE

ALBERTA ENVIRONMENT'S COMMITMENT

TO SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT

As has been pointed out, Alberta Environment views its responsibilities for environmental protection within a broad framework of intergovernmental cooperation. Albertans recognize their responsibilities to other Canadians and strive to prevent and minimize transboundary environmental impacts. This is particularly true when Albertans work cooperatively with other provinces, territories and the federal government to achieve the protection, improvement and wise use of Alberta's water resources. Albertans clearly place a high priority on sound water management.

Alberta Environment is committed to ensuring that Albertans will have every opportunity to understand and provide advice on decisions affecting our environment. Our commitment to public involvment extends far beyond these hearings and permeates the department's overall operating philosophy. We have just outlined some of the examples of that commitment a few minutes ago. And, as Dr. Weaver has just explained, Alberta Environment is also dedicated to continuing to show leadership in maintaining a leading edge in environmental protection and pulp mill development.

Albertans also place a high priority on achieving sustainable development, which ensures that the utilization of resources and the environment today does not impair prospects for their use by future generations. Albertans are dedicated to achieving sustainable development. The Department of the Environment, directly and in cooperation with others, manages water, land and air as sustaining elements of our environment for the benefit of future generations. Formal Environmental Impact Assessments are required for all major developments, to predict the sustainability of these developments and to determine where their impact can be mitigated. Regarding water, we maintain stream flows, protect basic water quality and instream uses to ensure that our rivers are sustained.

Albertans' commitment to environmental protection is not a recent development; in fact, Albertans have a long history of commitment to environmental protection.

The Northwestern Pulp and Power Ltd. mill at Hinton was one of the first mills in Canada to be required by one of Alberta Environment's predecessors - the Provincial Board of Health - to install secondary treatment of its effluent

in the 1960s. Alberta Environment co-sponsored its first review of the environmental effects of timber harvesting as early as 1973 in a precedent setting "class" environmental impact assessment. Four years later, Alberta's Minister of the Environment ordered province-wide public hearings into the environmental effects of forestry operations by the Environment Council of Alberta (ECA). During a two year period, the public was actively engaged in a broad discussion of the environmental impacts of forest development throughout Alberta. This process culminated in public hearings by the ECA in 15 locations across the province.

Alberta Environment has had a regulatory responsibility for pulp mills for many years and has been aggressive in ensuring that pulp mill pollution controls improve as new technology develops. The bleach kraft pulp mill at Hinton has undergone a series of improvements in both air and water pollution controls through Alberta's licence renewal policy and direct regulatory orders. For instance, in 1974 the Hinton mill was ordered to make substantial improvements in its air pollution controls. When the Grande Prairie pulp mill was developed in 1973, Alberta Environment insisted that state of the art pollution

controls be included in the mill design, largely based on previous experience with Hinton. Each licence renewal has seen further improvements in pollution controls, such as the renewal of the 1983 Clean Water Licence in Grande Prairie when colour limits were further reduced. Last month, in connection with the renewal of the licence to operate, Procter & Gamble Cellulose Ltd. was required to file a $100 million Action Plan for Water Quality Improvement to incorporate leading edge technology to control organo-chlorines.

Since April 1986, when Millar Western Industries disclosed its plans for the first CTMP mill in Alberta, Alberta Environment has been actively concentrating on the impact of pulp mills. During that time there have been proposals for two additional CTMP mills, the expansion of the two existing kraft mills and proposals for two new kraft mills. During a 44 month period, since April 1986, the staff of Alberta Environment have accomplished a great deal and more remains to be done. What follows are highlights of what has been accomplished.

Each of the proposals have been subjected to comprehensive Environmental Impact Assessments, including extensive

public consultation programs that have touched almost every area in northern Alberta. Each EIA has been exhaustively reviewed and evaluated by scientists and experts in more than 18 Alberta Government departments and agencies. In addition, experts in various federal departments and agencies have also reviewed the EIAs through an Agreement unique in Canada for intergovernmental cooperation in the evaluation of environmental impact assessments.

Alberta's leadership and early recognition of the need to control the discharge of chlorinated organics from kraft mills has put Alberta in the position of requiring existing, expanding or new mills to incorporate all the latest technologies to control, minimize or eliminate these pollutants. Our goal is to reduce dioxins to an absolute minimum or eliminate them if possible. Our standards regulate pulp mills to the best achievable levels. The first mill in Canada to incorporate all of the latest technologies including extended delignification, oxygen delignification and chlorine dioxide substitution will be in Alberta at Hinton, an old mill undergoing expansion.

I would like to now call upon Mr. Scott McClure, Head of our Water Quality Branch, Standards & Approvals Division to present some information on chlorinated organics.

CHLORINATED ORGANIC COMPOUNDS

INTRODUCTION

The Permit to Construct issued to the Peace River Pulp Co. (Daishowa)in 1988 contained a standard for Total Organically Bound Chlorine (TOCl). This was the first time chlorinated organics had been regulated for a North American pulp mill. The standard stated in the permit will be reviewed before the plant starts to operate, to take into account any new data that may come forward between the start of construction and completion.

THE REGULATORY APPROACH

The approach taken by Alberta is to reduce the discharge of AOX compounds into the environment as much as technically feasible. To meet this goal, the department has set technological standards.

All kraft mills in the province are required to install extended delignification, oxygen delignification and high chlorine dioxide substitution. This equipment, in conjunction with a high degree of wastewater treatment,

should reduce the amount of AOX discharged to below 1.5 kg/ADMT.

After a mill has installed the equipment, it will be required to go through a testing procedure to prove out the equipment's capabilities of reducing the AOX. An optimum range will be established and a standard set, by Alberta Environment. These standards will vary from plant to plant depending on the type of wood mixture they are processing, however, all mills will have to meet at least 1.5 kg/ADMT. Figure 1 illustrates the commonly assumed AOX reduction as each of the technologies are applied.

Using the assumed values in Figure 1 and applying them to the type of facilities Alberta pulp mills have historically had in place (Figure 2), there is an anticipated decrease in the total amount of AOX discharged on an annual basis, even with the inclusion of the Al-Pac mill.

DIOXINS

It is not our intention to go into detail on dioxins today. Some points of clarification were added by Dr.

Rammamoorthy of Alberta Environment on December 7, 1989. We would simply like to address one point.

The technology exists and is being utilized to reduce the formation of these compounds 10 to 100 fold before the introduction of the major changes to reduce chlorine use.

Therefore, with the implementation of the new technology, the discharge of dioxins and furans will be substantially reduced over historic values.

As early as October 26, 1987 Alberta's Environment Minister publicly commented on the need to be "prepared to respond to an increased demand for pulp and paper development in the future." At that time, it was announced that the following 10 point program had been initiated:

1) testing for dioxins in the river downstream of Alberta's two kraft mills and inplant effluent and sludges;

2) data collection on ambient levels of dioxins in the environment was started, using the recent development of the technical capability to detect dioxins at ultra-trace levels;

3) a risk assessment of the environmental and human health effects of dioxins at levels found in the pulp mill context;

4) participation through federal-provincial committees and workshops in the development of multi-media standards for dioxins to help assess the total exposure of humans to dioxins from all possible pathways such as air, food and water;

5) monitoring results of dioxin research underway in the United States and Ontario by scientists at the Alberta Environmental Centre;

6) a comprehensive planning study for the Athabasca River Basin including several reports on water quality issues to help establish the total capacity of the Athabasca River systems to assimilate municipal and industrial effluent;

7) the release of a study conducted by the Alberta Environmental Centre on the Toxicity of Kraft Pulp Mill Effluent on Fish indicating that kraft mill effluent from our Alberta plant was not acutely toxic to fish;

8) a consultant study to assess alternate treatment technologies for pulp mill effluent;

9) a receiving water environmental impact study for present and future pulp and paper mills on the Athabasca River including various scenarios for pulp mill growth and effluent standards.

10) a literature review examining various pulping and wastewater treatment technologies

Staff involved in these and other initiatives are part of our team here today and will be available for questions on the results of these initiatives later.

As a result of these 10 initiatives, Alberta Environment placed itself in a position to examine pulp mill proposals with the benefit of a substantial background of experience, expertise and scientific information. Using the expertise developed for other river basins, Alberta Environment has the ability to predict the environmental impacts of cummulative discharge sources using sophisticated computer simulation models that have remarkable accuracy. Having invested more than $1 million in some of the most intensive river water quality monitoring ever undertaken in the province, Alberta Environment has been able to predict the levels of dissolved oxygen in the Athabasca river under the worst possible conditions. The understanding brought through these efforts enables us to examine the sustainability of the developments proposed on the Athabasca River and examine the aquatic system under stress conditions brought

about by natural fluctuations in river flows, especially during low flows and ice covered conditions.

I would like to have Mr. McClure now give a further presentation on dissolved oxygen levels in the Athabasca River.

DISSOLVED OXYGEN IN THE ATHABASCA RIVER

INTRODUCTION

The Athabasca River drains the north central part of the Province. It starts in Jasper National Park and flows northeast approximately 1400 kilometres discharging into Lake Athabasca (Figure 1). During the winter, the river is covered with ice from Hinton to the Grand Rapids located approximately 120 kilometres upstream of Fort McMurray. The ice cover prevents reaeration of the river for approximately 820 kilometres. The combination of low flows (Figure 2) and ice cover makes the river very vulnerable to oxygen depletion during late winter.

Alberta Environment recognized that it required the capability to predict the impact of industrial developments on the river. An extensive program developed and calibrated a computer model during the winters of 1987/88 and 1988/89. A presentation on the development and calibration of this model was given to the Review Board by Mr. Hal Hamilton, at the hearings in Grasslands.

The model was completed during the summer of 1989. The model predicted a greater impact on the river by pulp mills than had been anticipated previously.

It should be pointed out that in most of this discussion, we will be using the flow known as the 7Q10. This refers to the one consecutive week of lowest flows expected on an average of once every 10 years. On Figure 2, it would be the lowest point on the bottom line. It should also be noted from Figure 2 that in the winter, the flows decrease to a low level and remain.

BASELINE CONDITION

In order to ascertain pristine conditions, that is, without any development on the river, the model was run in an unloaded condition (Figure 3). From this, the model predicts that in its natural state and at 7Q10, the river's dissolved oxygen would drop to a level of approximately 8.7, prior to the Grand Rapids. It is possible therefore to conclude that the river cannot maintain 9.5 mg/L naturally.

The cause for this oxygen depletion has not been studied

in detail but this is not an unusual condition for an ice covered river in Northern Alberta. Some of the factors that may contribute to this depletion are; decomposition of naturally occurring organic material in the river or in the tributaries and the inflow of groundwater in which the oxygen has been chemically depleted underground.

HISTORICAL LOADING

A review of the historical loadings on the river from pulp mills is illustrated in Figure 4. During the late 50s and 60s the kraft mill at Hinton discharged in excess of 30,000 kilograms per day BOD into the Athabasca River. Using this loading it could be projected that there would have been a serious depletion of oxygen in the river from shortly downstream of Hinton to the Grand Rapids. In some locations the oxygen may have been reduced significantly. This lack of oxygen likely had a serious impact on the fish population in the river.

In 1967, the plant made major improvements to its effluent treatment system as a result of an order from the Provincial Board of Health.

The loading dropped substantially, and stayed relatively constant until a Water Quality Control Order in 1975 required further upgrading to the wastewater treatment facility. Improvements were made to the system and the loading dropped and remained at approximately the same level it is today.

The Weldwood plant is currently licenced to discharge BOD at a rate of 6600 kg/d (11.7 kg/ADMT). In 1987, the company proposed to expand the facility and requested that their loading be changed to 7700 kg/d (7 kg/ADMT). This number would be the maximum allowable monthly loading with an allowable daily variation of two times the monthly average. Applying either the existing or proposed loading conditions, the model predicts the dissolved oxygen in the river at the 7Q10 flows (Figure 5).

The addition of the Millar Western pulp mill to the Athabasca River in 1988 has increased the extent of the predicted dissolved oxygen depletion as will the Alberta Newsprint Company mill at Whitecourt scheduled to commence operation in the summer of 1990.

Alberta's current Surface Water Quality Guidelines

indicate that a dissolved oxygen of 5 mg/L be maintained at all times. This standard is now under review. Figure 6 shows the relative distribution of loading between existing and proposed mills. It is evident that the loadings from Weldwood will have to be dealt with before any significant improvement can be made in the dissolved oxygen of the Athabasca River.

IMPACT OF AL-PAC

Alberta Pacific Pulp and Paper Company (Al-Pac) mill has submitted a proposal to discharge 1.5 kg/ADMT of BOD. Utilizing the model, at 7Q10 flows, this loading would account for an oxygen depletion of approximately 1.2 mg/L between the plant site and the Grand Rapids.

SUMMARY OF FINDINGS FROM THE DOSTOC MODEL

(a) To maintain a minimum of 5 mg/L, at 7Q10, the allowable load to the Athabasca should be no greater than approximately 11000 kg spread throughout the river reach. An example of this would be a scenario in which all the mills meet 3 kg/ADMT with the exception of Al-Pac at 1.5 kg/ADMT. Figure 7

illustrates this scenario for both the 7Q10 condition and the average winter flows.

(b) To maintain a minimum dissolved oxygen at 6.5, at 7Q10, the allowable loading on the Athabasca river should not exceed 6500 kg/d discharged throughout the reach of the river. One scenario which could achieve this would be all mills discharging at no more than 1.5 kg/ADMT. Figure 8 illustrates this scenario at both 7Q10 and average winter flows.

(c) To maintain 9.5 mg/L at 7Q10 - this can not be maintained naturally, i.e. with no mills on the river.

ALBERTA'S POSITION

The Department of Environment will use whatever means are available to prevent the DO from dropping below water quality objectives.

ACTION TAKEN

In January of 1989, the Millar Western licence was renewed. In order to respond to a growing awareness of

the dissolved oxygen problem on the Athabasca River, the Department specified loading limits dependent on flows. As the flows decrease the allowable loading from the mill decreases. The company was also required to monitor the dissolved oxygen at the confluence of the Lesser Slave River and adjust their loading so that the dissolved oxygen never went lower than 5 mg/L. As a consequence of these two requirements, the company was forced to decrease production to the extent of occasionally shutting down to meet their licence requirements.

CURRENT SITUATION

As mentioned previously, the Athabasca River will be restored to a dissolved oxygen condition that could support a high quality fishery when the loading from Weldwood has been restricted during low flow conditions. The company is currently expanding the plant from 565 t/d to 1100 t/d. When they applied for a Permit to Construct in 1987 the permit provided for a maximum monthly loading of 7700 kg/d (7.0 kg/ADMT). The company has just completed modifications to their wastewater treatment plant to meet the specified loadings. The Permit to Construct also stipulated that there was a concern for

dissolved oxygen at low flows and that a low level flow condition will be reconsidered at the time of licensing.

ACTION PLAN

Weldwood could be issued a licence for the maximum allowable monthly average of 7700 kg/d (7.0 kg/ADMT). The licence will also have low flow loading restrictions which with the combination of the Millar Western mill this winter and the Millar Western and Alberta Newsprint mill next winter will maintain the dissolved oxygen at a minimum value of 5 mg/L throughout the entire reach. This licence will be in effect for an appropriate time to allow Weldwood to develop and implement a plan which will ensure the protection of the Athabasca River at a dissolved oxygen of 5 mg/L during low flow period.

While the Weldwood plant is implementing its action plan, a comprehensive study will be undertaken of the fisheries in the Athabasca River including existing species, habitats and the assessment of what species would have existed prior to development on the river. In addition to reviewing the fishery in terms of the impact of dissolved oxygen, the review will also investigate the impact of

other factors associated with mill effluent which may have an effect on the fishery.

Following the completion of the Weldwood action plan, the model will be recalibrated to adjust its predictive capacity for the new loading conditions and the new facilities on the river.

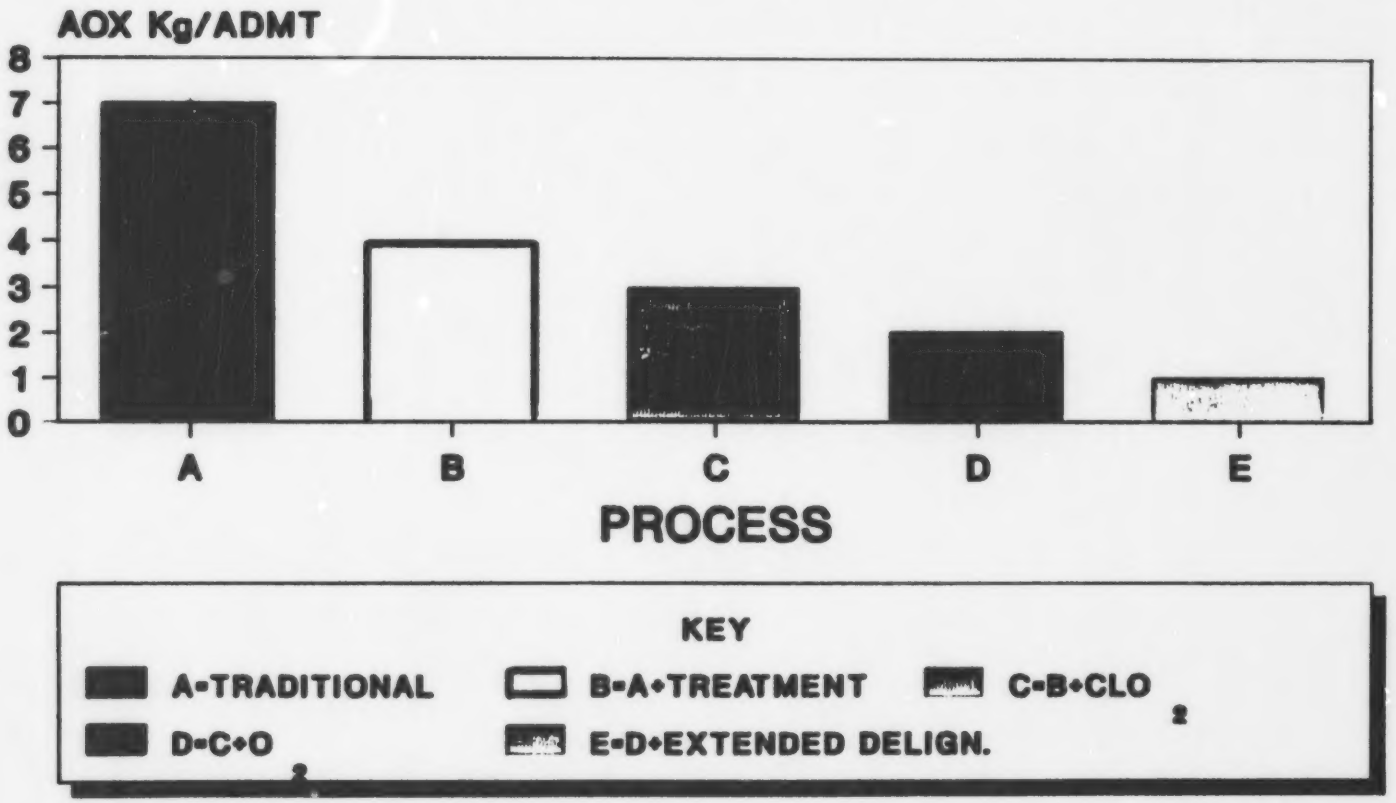
Based on the fishery information, an oxygen objective will be established for the river. New allowable loadings for all pulp mills on the river will be established to meet the new objective.

Regarding dissolved oxygen in the Athabasca River, it can be seen that with the information and predictions that became available to Alberta Environment late last summer, a problem in maintaining dissolved oxygen levels was predicted under worst case conditions. Alberta Environment formally brought this information to the attention of the representatives of the pulp and paper industry in late August in a technical seminar and to the Alberta public, through full disclosure of the monitoring and modelling on September 6, 1989. Industry was requested to examine the new information and was able to examine various alternative responses to the predictions during September and October. In mid November, industry representatives met with Alberta Environment officials to report progress, including measures available to control biological oxygen demanding effluent discharges from all pulp and paper mills on the Athabasca River. Discussions are ongoing between Alberta Environment officials and pulp mill industry representatives.

Alberta Environment is committed to maintaining dissolved oxygen levels in the Athabasca River and will use any measures necessary to ensure the protection of the environment, including issuing STOP ORDERS under departmental legislation.

Figure 1

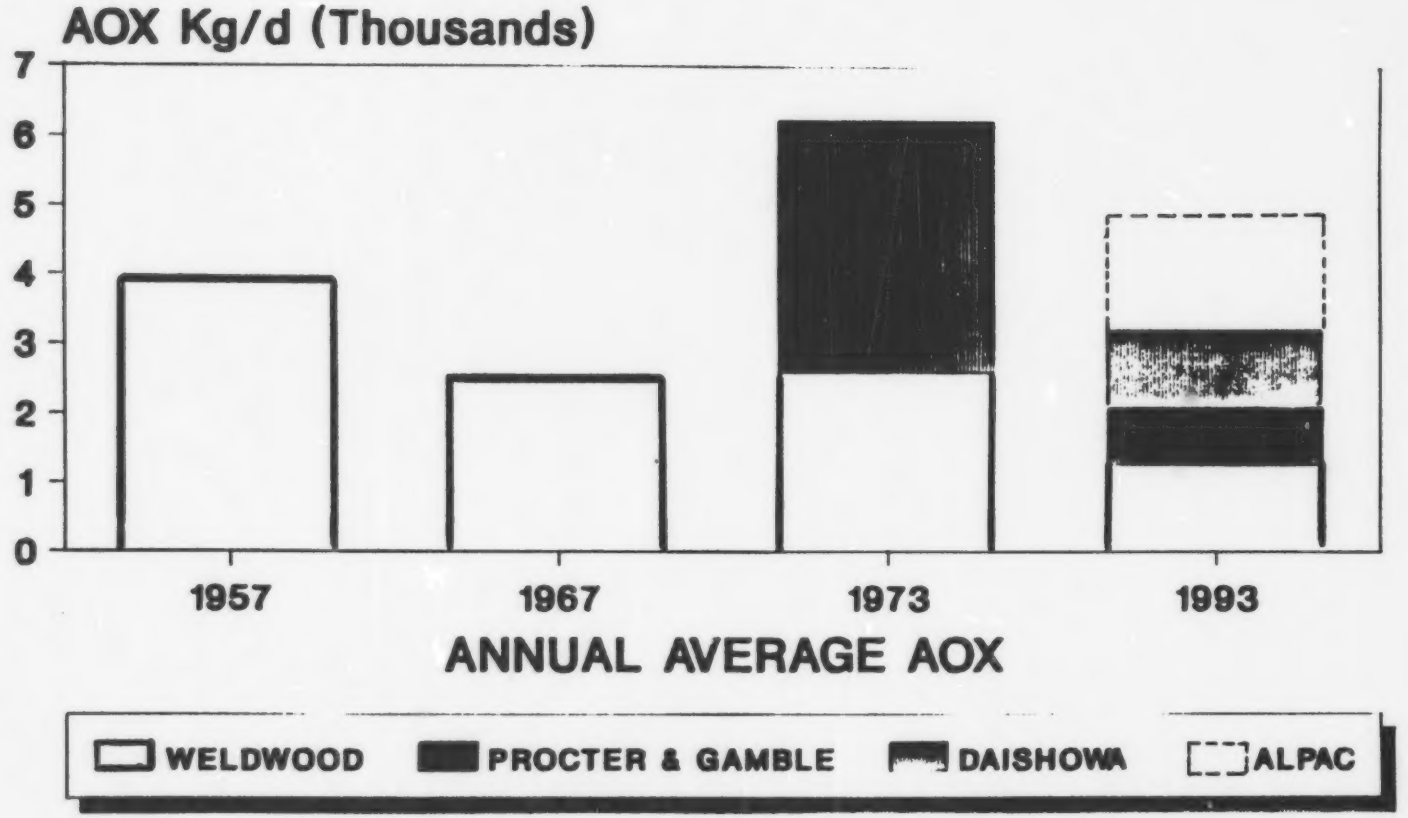
AOX DISCHARGES FOR VARIOUS PULP MILL PROCESSES

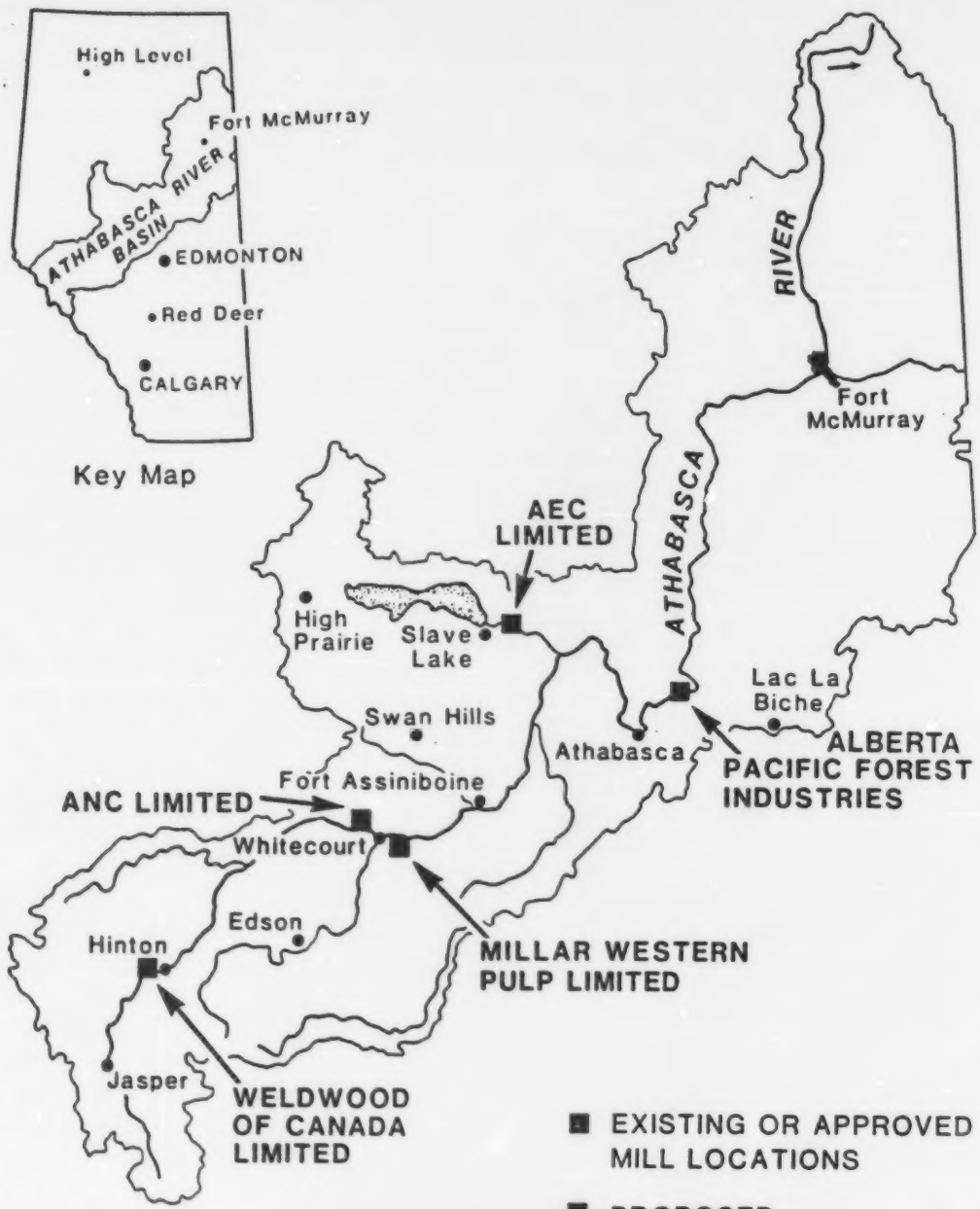


TREATMENT IS WITH AERATED LAGOONS
WOODSTOCK IS SOFTWOOD

Figure 2

ESTIMATED DISCHARGES OF AOX TO THE PEACE AND ATHABASCA RIVERS FROM ALBERTA PULP MILLS





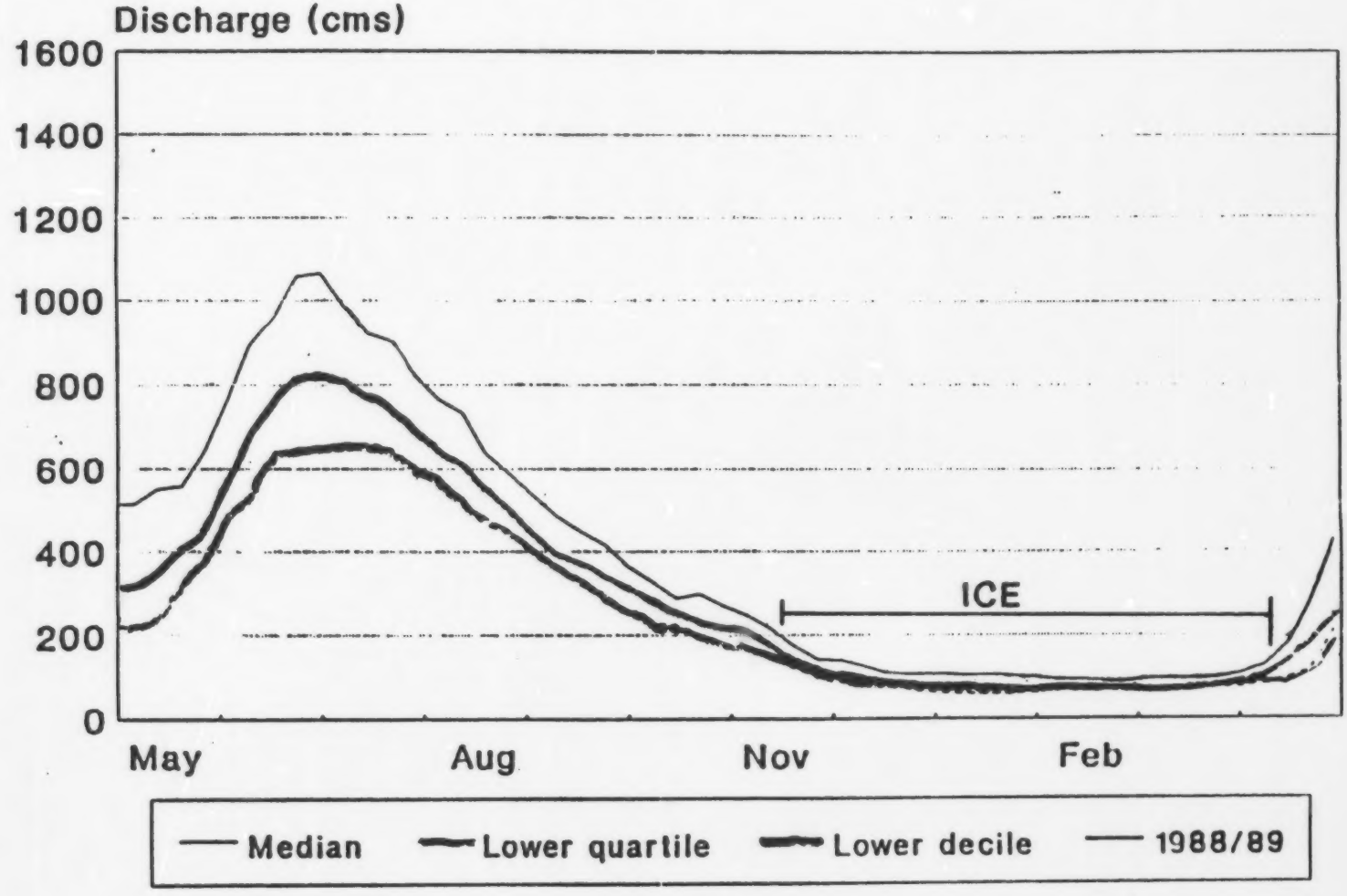
PULP MILL LOCATIONS
ATHABASCA RIVER BASIN

Alberta
ENVIRONMENT

FIGURE 1

Figure 2

Athabasca River at Athabasca
Seasonal Flow Variability



Hydrology Branch, Alberta Environment

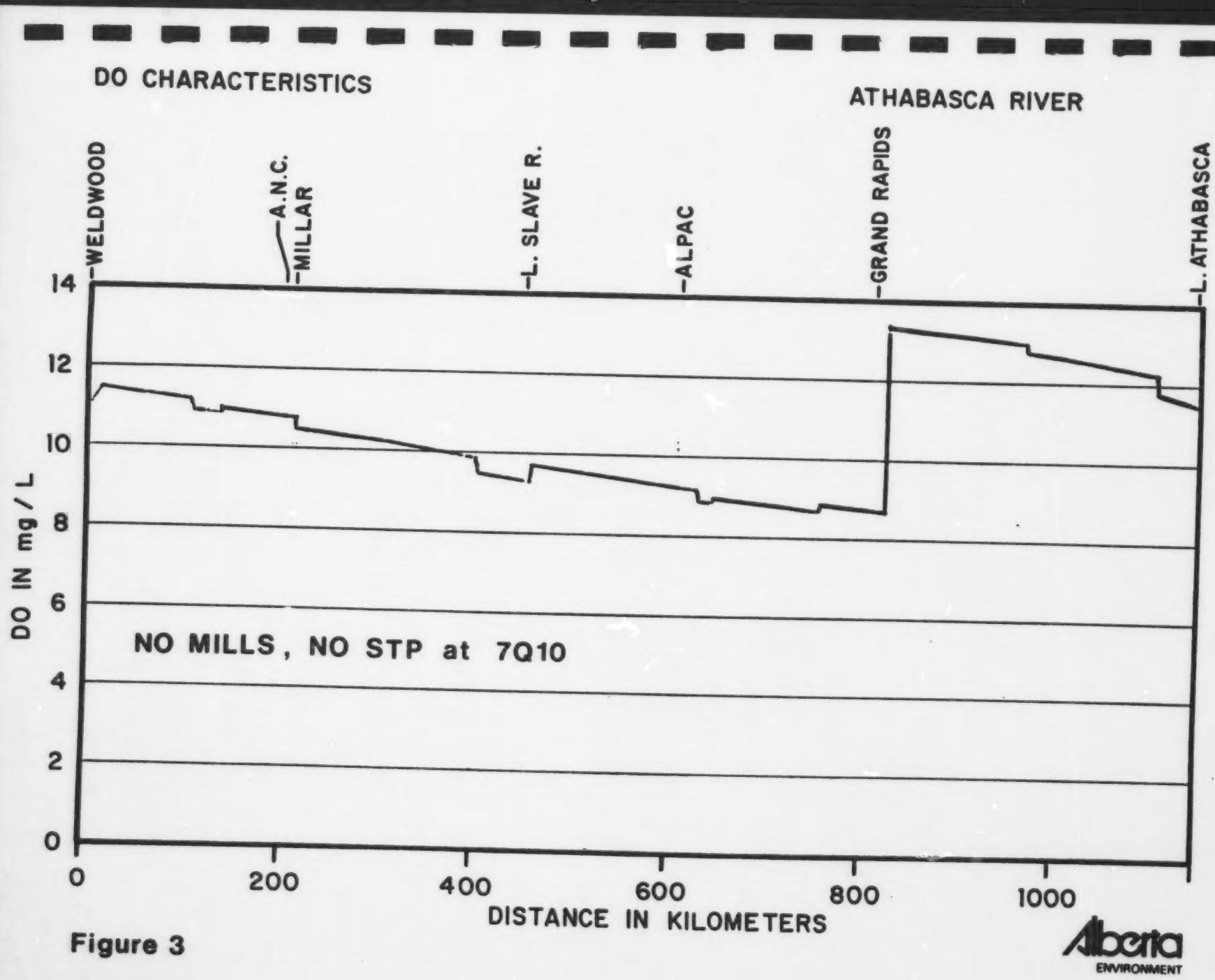
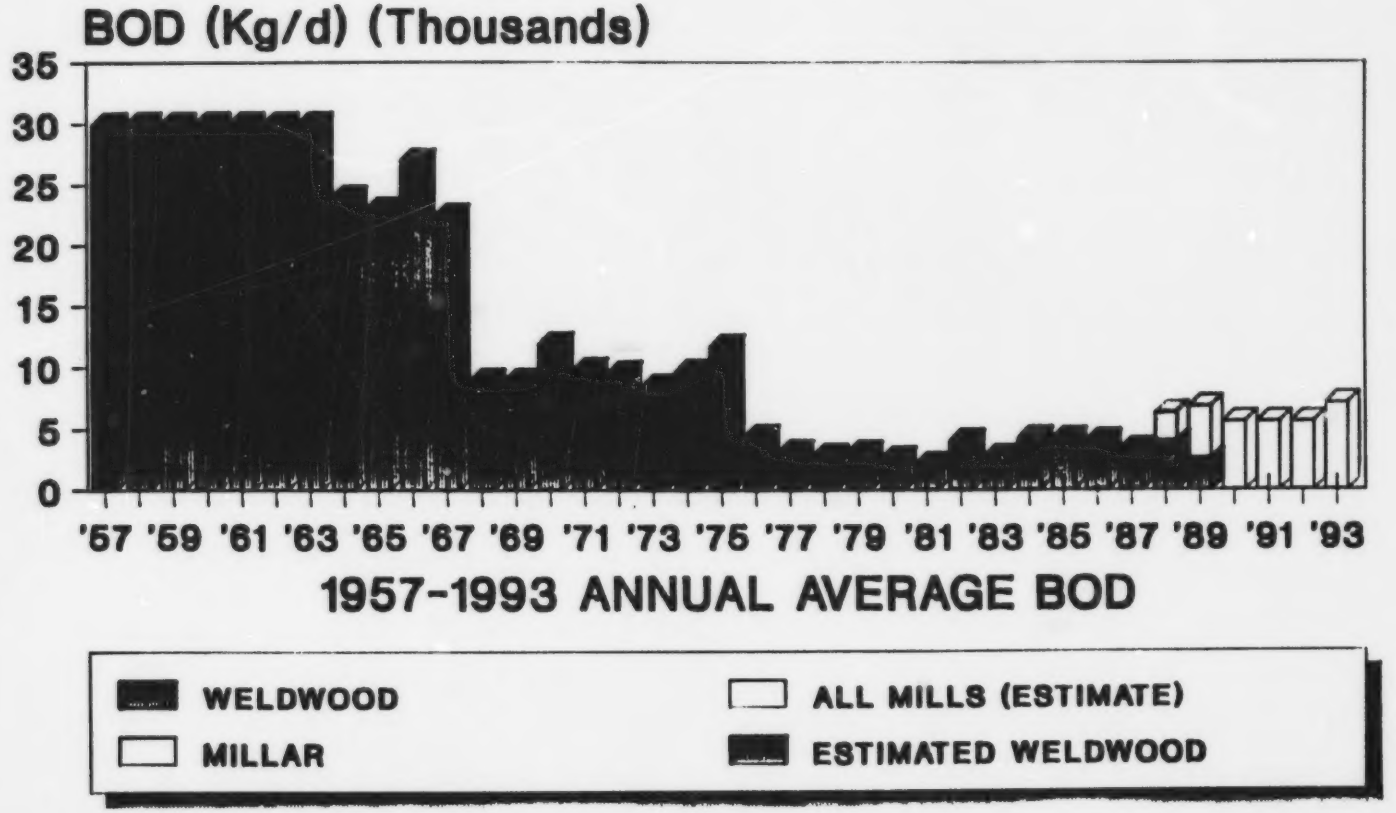


Figure 3

Alberta ENVIRONMENT

Figure 4

HISTORICAL MILL DISCHARGES OF BOD TO THE ATHABASCA RIVER



1990-1993 REPRESENTS ESTIMATED
PERFORMANCE BASED ON NEW REQUIREMENTS

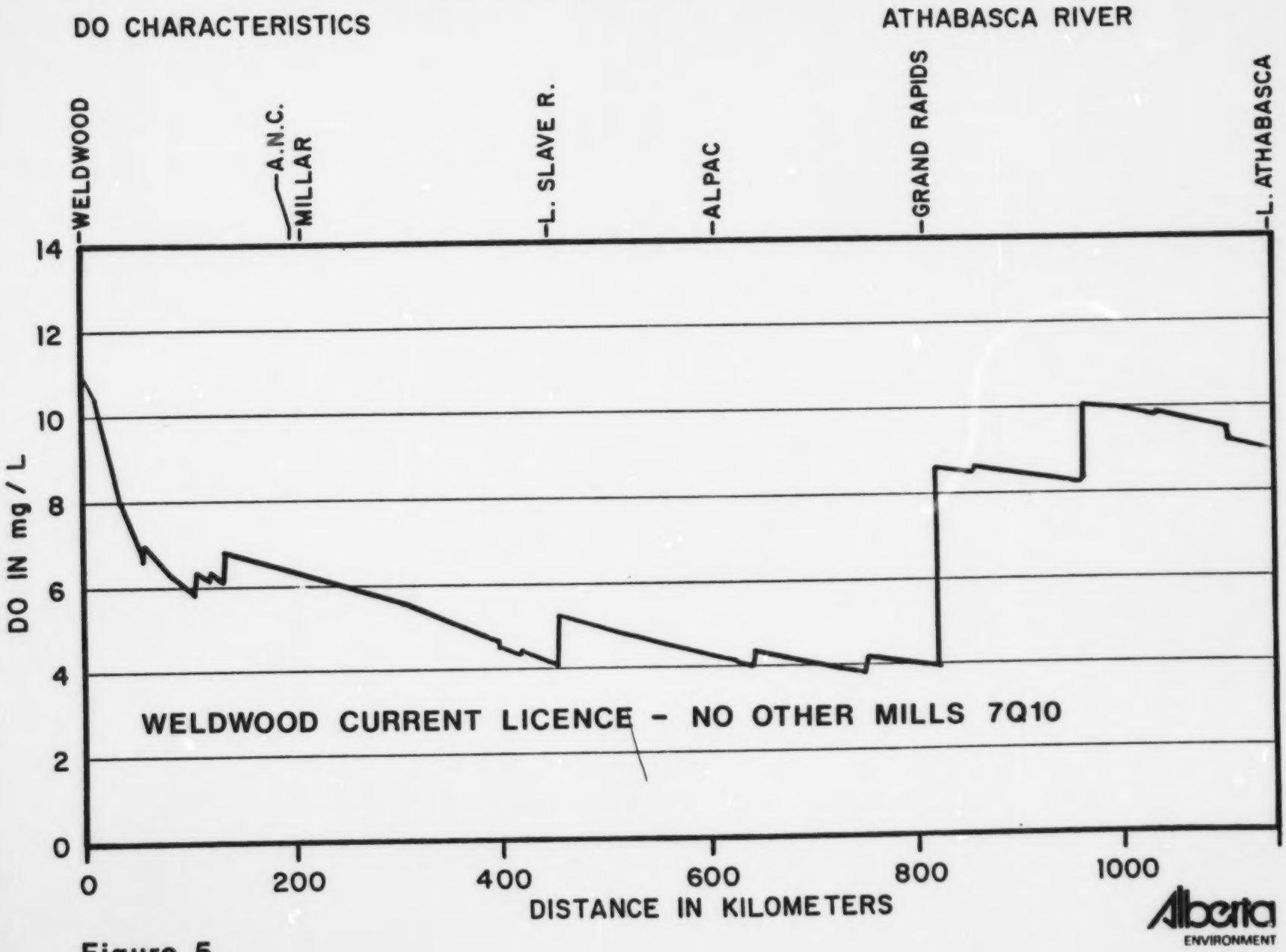
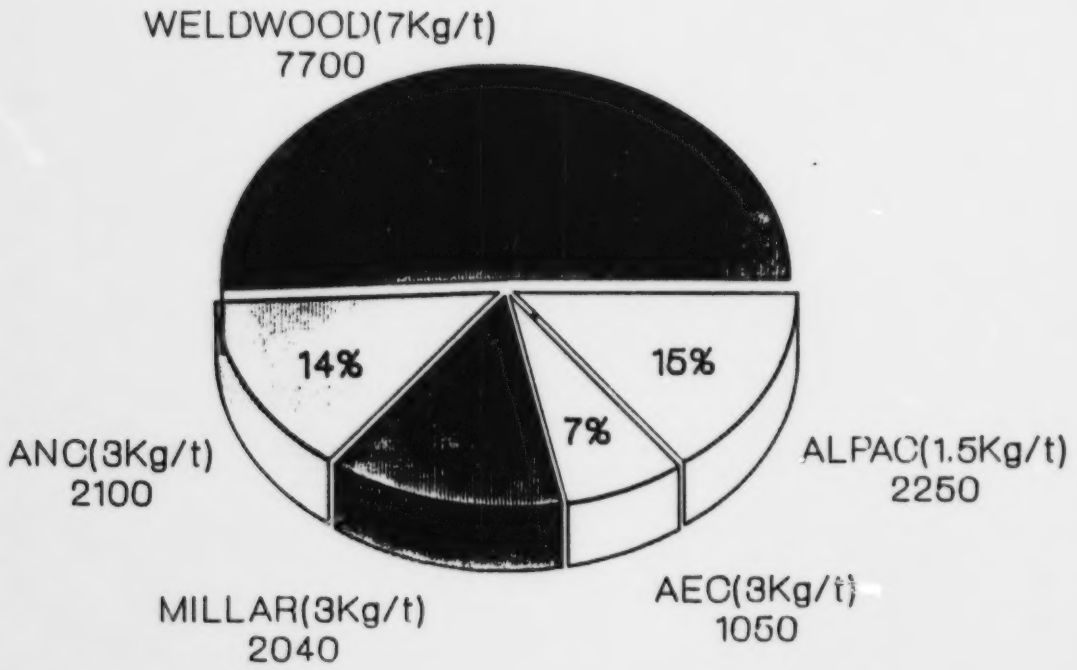

DO CHARACTERISTICS
ATHABASCA RIVER
WELDWOOD
A.N.C.
MILLAR
L. SLAVE R.
ALPAC
GRAND RAPIDS
L. ATHABASCA
DO IN mg / L
14
12
10
8
6
4
2
0
WELDWOOD CURRENT LICENCE - NO OTHER MILLS 7Q10
0
200
400
600
800
1000
DISTANCE IN KILOMETERS
Alberta
ENVIRONMENT

Figure 5

Figure 6

RELATIVE BOD CONTRIBUTIONS
ATHABASCA MILLS



DECEMBER 03, 1989

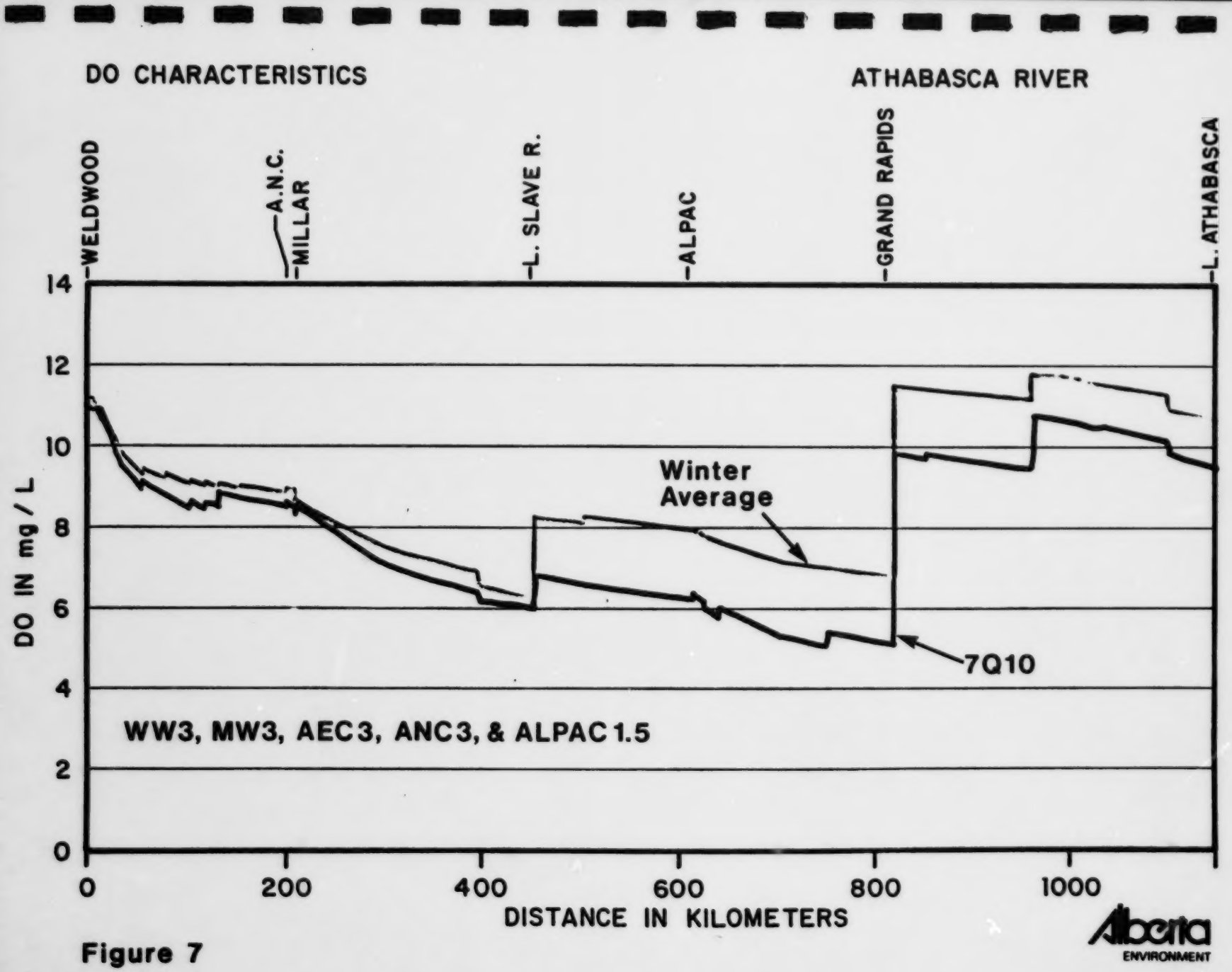

DO CHARACTERISTICS
ATHABASCA RIVER
WELDWOOD
A.N.C.
MILLAR
L. SLAVE R.
ALPAC
GRAND RAPIDS
L. ATHABASCA
14
12
10
8
6
4
2
0
DO IN mg / L
Winter
Average
7Q10
WW3, MW3, AEC3, ANC3, & ALPAC 1.5
0
200
400
600
800
1000
DISTANCE IN KILOMETERS
Alberta
ENVIRONMENT

Figure 7

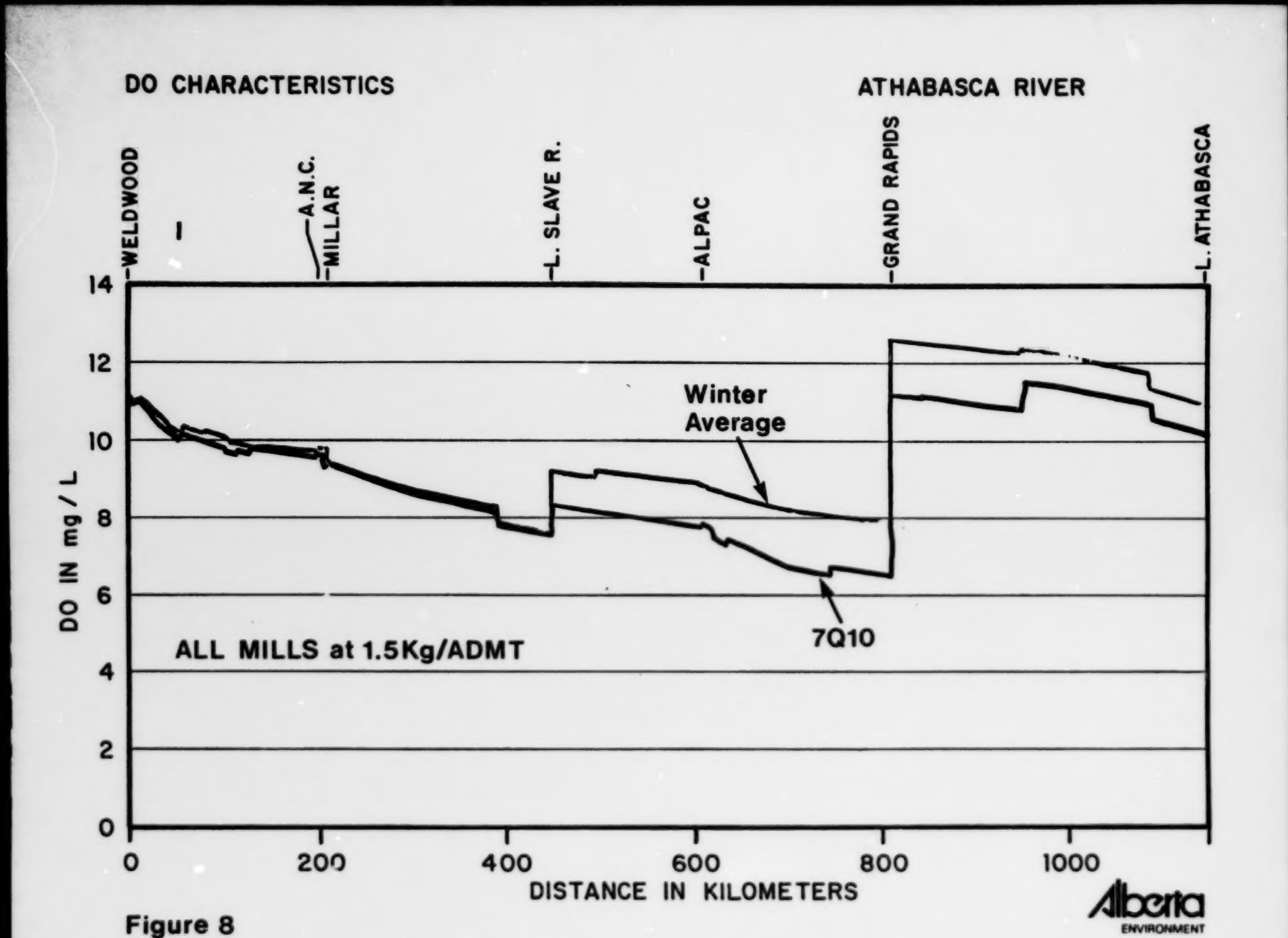

DO CHARACTERISTICS
ATHABASCA RIVER
WELDWOOD
A.N.C.
MILLAR
L. SLAVE R.
ALPAC
GRAND RAPIDS
L. ATHABASCA
14
12
10
8
6
4
2
0
DO IN mg / L
Winter Average
7Q10
ALL MILLS at 1.5Kg/ADMT
0
200
400
600
800
1000
DISTANCE IN KILOMETERS
Alberta
ENVIRONMENT

Figure 8

ALBERTA POSITION

THE DISSOLVED OXYGEN WILL NOT BE PERMITTED TO DROP BELOW CURRENT OBJECTIVES

ACTION PLAN

- Restrict loadings at low flows
- Reduce loading from Weldwood
- Assess fishery
- Review dissolved oxygen objective for the river
- Establish new loadings for all mills (if required)

Alberta's Surface Water Quality Objective for dissolved oxygen of 5.0 mg/L has been under review since the Task Force, chaired by Alberta, reported on Canadian Water Quality Objectives to the Canadian Council of Environment Ministers. The Task Force recommended a national objective of 6.5 mg/L. With the pulp mill development on the Athabasca River, additional information is needed to confirm the need for the objective of 6.5 mg/L to protect the aquatic system in the Athabasca upstream of the Grand Rapids. Should information become available that confirms a level of 6.5 mg/L is required to protect the river, Alberta Environment will adopt the objective and immediately pursue regulatory initiatives to protect the river.

Mr. Bryan Kemper will now outline Alberta Environment's monitoring program designed to complete the monitoring and ensure we will have all the information needed for the ongoing protection of the river.

SLAVE RIVER
RIVER
FORT CHIPEWYAN
PEACE
LAKE CLAIRE
FORT VERMILION
OLD FORT
CLEARWATER R.
RIVER
FORT McMURRAY
GRAND RAPIDS
ATHABASCA
TAYLOR
PEACE
RIVER
PEACE RIVER
SMOKY RIVER
GRANDE PRAIRIE
WAPITI RIVER
LESSER SLAVE LAKE
LESSER SLAVE RIVER
SMITH
ATHABASCA
RIVER
WHITECOURT
ATHABASCA
HINTON
JASPER
SCALE
0 20 40 60 km
0 20 40 mi.
PEACE & ATHABASCA RIVER SYSTEM
PULP MILLS (includes proposed)
RIVER MONITORING NETWORK
INTENSIVE RIVER MONITORING AREAS

WATER QUALITY AND THE CONCERNS OF DOWNSTREAM USERS

Recent issues pretaining to water quality on our northern rivers have focused on two areas:

1) organochlorines
2) BOD loading and its effect on Dissolved Oxygen

Sampling for dioxins and furans at each of the municipal water supplies in 1989 confirmed that these compounds are undetectable at the current method detection limits in the raw river water and the treated drinking water.

Alberta Environment began an accelerated ambient monitoring program in 1988 to describe the present water quality of the Athabasca River, the Peace River and the Wapiti-Smoky system. Reports on two of these areas have been completed and provided to this review board, with the third report due for release in late winter. Oxygen, nutrients, salts and other water column parameters have been the focus of this work because of their importance to the health of the river ecosystem. The results of this work have been used in predictive assessments including the DOSTOC model and to monitor the effect of the existing pulp mills on the rivers.

During this winter river monitoring is being increased with the installation of two real time oxygen stations at Smith and above the Grand Rapids. Other stations track conditions at hourly intervals below each of the operating mills once the ice has formed. This system is at the center of our commitment to river protection.

The second phase of this monitoring program describes the existing conditions of the persistent organochlorines and PAHs in sediments and biota throughout the Peace and Athabasca river systems. This program started in 1989 and will be completed in 1991. Since many of these contaminants bind strongly to sediments and are known to bioaccumulate; depositional areas such as the Peace and Athabasca deltas will receive special attention. The monitoring for contaminants in wild rice, muskrats and human food sources such as fish will be a priority.

Alberta Environment, working with the Alberta Research Council, the Alberta Environmental Centre and private and public laboratories will describe the in-river fate and effects of the most important contaminants. Current levels of sediment contamination investigated at both kraft mills in 1988 are being extended and compared to

historical values contained with the sediment profiles for the most toxic forms such as dioxin and furans to provide some perspective of the effect of the pulp mills. Collection of sediment samples has already begun and will continue throughout the winter.

Low flow water quality surveys will include appropriate effluent constituents including AOX to determine the extent of its downstream movement. The program will incorporate cumulative assessments, predictive forecasting and a complete QA/QC element to ensure data reliability and use by all users.

The development of a comprehensive water quality database permits Alberta Environment to evaluate and develop new water quality objectives (which are protection goals) using the process outlined on the overhead. Important features of this process include comparison with existing objectives, public involvement and a review period to ensure that compliance with them is providing adequate levels of protection for the Athabasca and Peace Rivers. Treatment levels will continue to be improved.

Forecasts show that new licence to operate terms and

conditions will be required to accommodate the developments proposed. To ensure satisfactory protection, Alberta Environment must complete the transition from using only technology based effluent standards to the incorporation of ambient (or river) based standards for specific reaches of the Athabasca River. Oxygen will be the first 'candidate' followed by other compounds in order of their importance.

Objectives for oxygen will be assessed on a priority basis. Information needed to do this includes:

* the available monitoring data
* calibrated DOSTOC model
* inventory of fisheries from Hinton to Ft. McMurray with reference to fall spawning trends areas
* effluent loads and treatment levels

The process of defining in-river objectives will involve:

* establishing the uses to be protected
* preparing criteria reviews including those for 5.0 and 6.5 mg/l levels of protection
* the identification of a suitable objective
* defining compliance.

It may be desirable to establish reach specific D.O.

objectives when the results of the fisheries inventories are in place. The environmental liaison committees will be directly involved in the review and establishment of dissolved oxygen objectives.

Monitoring programs in downstream areas are being developed with the advice of local resource user groups who will have full access to the results. This process wil be formalized over the next several months.

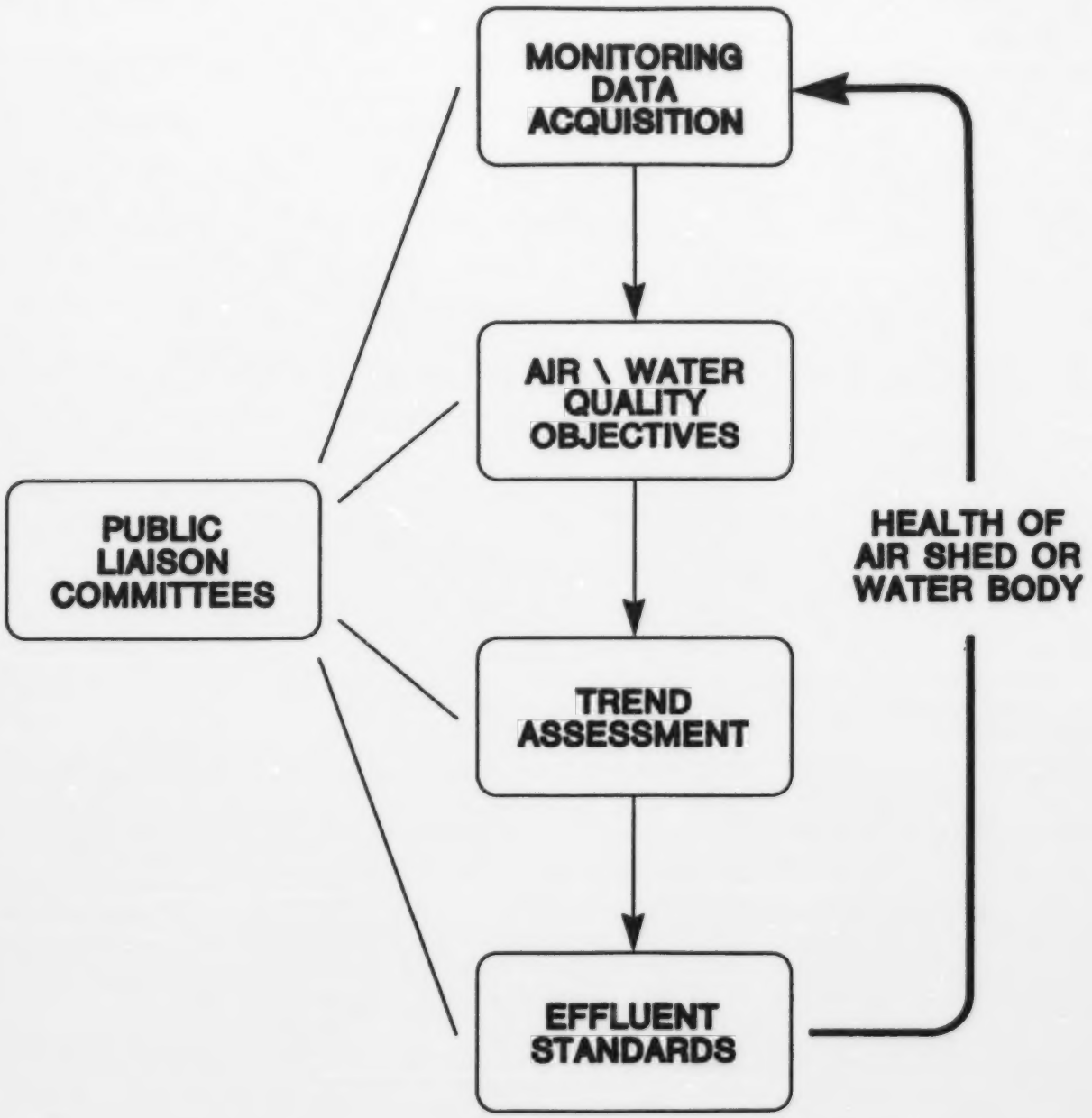
To ensure adequate public, industrial and regional government input to the results and interpretation of effluent and river monitoring data, Alberta Environment will form liaison committees to oversee the results of monitoring work done by all dischargers to the river. Participation will be a condition of the licence to operate and disclosure of industrial and municipal effluent data will be mandatory.

Results of Alberta's monitoring programs will be routinely reported to our transboundary partners and Alberta will work with the Alberta-Northwest Territories Technical Committee to significantly enhance monitoring programs on the Slave River and at the transboundary monitoring station at Fort Fitzgerald.

It is clear from the monitoring data available for the Slave River that contaminant monitoring programs in both Alberta and the NWT must incorporate suitable control sites to allow for the differentiation of long range transport of atmospheric pollutants from water borne pollutants.

By protecting the river and citizens in Alberta, we will be providing excellent levels of protection to renewable resources and to the residents of the NWT.

AIR & WATER QUALITY PROTECTION



Alberta Environment will be aggressively pursuing regulatory options to ensure sustainable development through the protection of dissolved oxygen levels in the Athabasca River. Specifically, Weldwood of Canada Limited has applied for a Licence to Operate their expanding mill at Hinton. Before a Licence to Operate can be issued

Alberta Environment must be fully satisfied that the effluent discharge will maintain the dissolved oxygen levels in the Athabasca River. The specific terms and conditions of the Licence to Operate are being finalized, but it is clear to Alberta Environment, based on information now available (that was not available at the time the Permit to Construct was issued on January 27, 1988) that any Licence to Operate must at least contain specific limitations on oxygen demand during low flow conditions.

Millar Western Pulp Ltd. has completed the upgrading of their waste water treatment system ordered by Alberta environment last February and will be operating at improved discharge levels this winter. Millar Western was put on notice at that time, that Licence to Operate limits of a least 3 kg/ADMT would be imposed at licence renewal (July 1, 1991).

Alberta Newsprint Company Ltd. has yet to apply for a Licence to Operate since the mill is still under construction. Licence to Operate terms and conditions will protect dissolved oxygen levels in the Athabasca River. Similarly, Alberta Energy Company Ltd.'s project is under construction and the company has yet to apply for a Licence to Operate.

All of the pulp mills on the Athabasca River will be required to operate in a manner that fully protects the river, under all conditions, through specific Licence to Operate terms and conditions that will be strictly enforced.

Alberta Environment has a concern for the protection of the Athabasca River. Our concerns are not limited to just one environmental impact and extend over a broad range of environmental issues. Alberta Environment has a special concern for the local environmental impacts that affect the residents in this community, including the effects already felt by individuals during the planning phase that includes these hearings.

Local impacts with implications for individual farmers,

concerns of families about school bus safety and local drainage changes are examples of local impacts that are important, especially when it affects you, your home and your family. In reviewing the information brought before this Board and keeping in mind the individuals who make up this Board, Alberta Environment believes that local impacts on the directly affected community will receive special attention. There are two issues that we would like to highlight for the Board in this regard: site selection for the pulp mill and air quality.

The Alberta Pacific pulp mill's intention is to serve the woods operations from a large area. A variety of factors are taken into consideration by the proponent in selecting a site for the development of the pulp mill. Factors considered by Alberta Pacific are described in the documents presented to this Board. In the site selection process, several alternative sites within a general area were identified and evaluated by the proponent in the very early planning stages for this proposal. A key issue before this Board in reviewing the Al-Pac EIA is the matter of siting and particularly whether or not the site chosen is the best site from an environmental impact perspective. Of special concern is whether the impacts of

the site chosen are acceptable to those who must live with them and whether the site selected provides sufficient opportunity to mitigate the impact. In the final analysis, the question to be answered is: Has the proponent selected the best site possible within the project area? Community presentations to this Review Board will provide considerable insight to the Board when they consider this following the hearings.

The air we breathe is as important as the water we drink. For those who live in close proximity to the proposed mill site, they are concerned about the quality of the air that they will breathe every day.

To provide some additional information in this area, Mr. Bob Beatty of our Air Quality Branch, Standards and Approvals Division will make a brief presentation today, but more details on this matter will be included in our written submission to the Review Board.

AIR QUALITY - PULP MILLS

From an air quality standpoint, the two main local issues regarding the AlPac kraft pulp mill are ambient odours and sulphur deposition. Alberta Environment has reviewed the available estimates of short-term ground level total reduced sulphur (TRS) concentrations and annual deposition rates as presented by AlPac in the EIA.

Odourous Emissions

The proposed mill will use state-of-the-art processes and pollution abatement equipment to control TRS emissions.

Atmospheric discharges from the AlPac mill are projected to comply with the department's guidelines and ambient air quality objectives.

Stack emissions under maximum normal operating conditions should not be a significant source of ambient odours. The maximum concentrations from these sources are projected to occur on plant property.

The majority of ambient odour occurrences will be due to the cooling pond emissions.

AlPac has provided an assessment of pond odour emissions and odour impacts, however, these estimates have a large degree of uncertainty because:

* assumed emission rates are only estimates based on initial pond design loadings and back calculations from existing ponds;
* results are very sensitive to temperature differences between the pond surface and the ambient air;
* site specific meteorological data was not available and use of this data may change the modelling results;
* human odour sensitivity is quite variable; and
* standard air quality models calculate one-hour averages whereas odour detection occurs on a near instantaneous basis.

AlPac has not, as yet, provided modelling results for the abnormal emission case where non-condensible gases are vented directly to the atmosphere. Even though this occurrence should be very infrequent, it is deemed important enough to assess as a worst-case scenario. It may affect the odour assessment results.

Based on the projected process emissions and compared to existing Alberta kraft mills, the AlPac mill should be a low-odour operation.

Based on the information provided in AlPac's odour assessment, for very sensitive individuals, odours can be expected to occur out to four miles for at least one hour out of the year. Beyond this distance odours may still be detected but at a lower frequency of occurrence.

Sulphur Deposition

Based on maximum emission rates, AlPac's predicted total sulphate deposition rate is approximately 4 kg/ha/a. This is well below the rate of 20 kg/ha/a of wet sulphate deposition used as a guideline in Eastern Canada. The AlPac deposition rate would also be well below the background rate for Alberta (10 - 29 kg/ha/a. sulphate). The AlPac deposition modelling was conducted in accordance with methods recommended by Alberta Environment. Incremental loading due to AlPac's emissions is less than our current Canadian guidelines and well below Alberta background levels. Monitoring deposition effects can be done by a soils testing program before and after operations of the mill.

Sustainable development means that the utilization of resources and the environment today does not impair prospects for their use by future generations. Today's utilization of the Athabasca and Peace Rivers must not impair their use by future generations. More specifically, pulp mill discharges must not impair prospects for river use by future generations. Alberta Environment has been taking its responsibility to ensure the protection of water quality very seriously for years, but particularly during the past three years and eight months during a period of unprecedented pulp mill development in Alberta. Environmental impact assessments, stringent effluent standards reflecting best achievable technology, comprehensive monitoring and various regulatory and policy initiatives have been put in place to ensure the environmental sustainability of the developments proposed. The overall direction for environmental protection has been established and major features of environmental protection are present in the projects proposed. Additional work to further refine and confirm our understanding and predictions are underway. The rate of change in protecting the environment from developments that in the past were damaging and unacceptable by today's standards is also unprecedented.

Albertans are committed to ensuring that their environment remains protected for present and future generations and Alberta Environment is giving full effect to that commitment through the trust placed in us to achieve the protection, improvement and wise use of our environment now and in the future.

ALBERTA ENVIRONMENT'S COMMITMENT

TO PROTECTION

PROTECTION

Tough environmental control standards and a comprehensive licencing system by themselves do not ensure compliance with the control requirements and protection of our environment. Inspection and investigation to check compliance and enforcement of the legislation for non-compliance are an important part of achieving the protection and enhancement of our environment.

Some presentations to the Review Board have reflected concern about the ability and willingness of the department to enforce its legislation.

* Ability to enforce is related to the legislative provisions to take enforcement action. Some reference conditions are: what constitutes an offence? what licence conditions were contravened? do specific environmental protection regulations apply?

* Willingness to enforce will be formalized in the Department's Enforcement Policy.

This brief presentation will touch on Alberta Environment's enforcement for environmental protection - past, present and future, highlighting some of the turning points in our history, keying especially on an 'Action Plan for Environmental Law Enforcement in Alberta', as

well as an overview of the enforcement process and the elements of an enforcement policy.

The licencing of industrial pollution sources and municipal facilities in Alberta began in the early 1960s under public health legislation. The legislative provisions for enforcement at that stage were minimal. With the formation of the Department of Environment and the enactment of the Clean Air and Clean Water Acts in 1971, specific enforcement provisions were incorporated in legislation. Principles such as the polluter pays and five-year licence renewal periods were defined by the Minister at that time. Although no formal enforcement policy existed then, the enforcement approach concentrated on negotiating compliance with industry. The history of enforcement actions from the 1970s to 1988 includes several initiatives designed to bring specific industrial sectors into compliance, for example, the installation of scrubbers on asphalt plants. For the most part, however, strict enforcement in line with current public expectations was not practiced.

A major air pollution incident in Calgary in 1987 and the department's inability to take direct enforcement action resulted in the Minister of Environment establishing the Review Panel on Environmental Law Enforcement in Alberta in July of that year. The considerations by the panel and its recommendations (An Action Plan for Environmental Law Enforcement in Alberta) which were presented to the Minister early in 1988 mark another major turning point in the enforcement of environmental legislation. The recommendations of the review panel on environmental law enforcement covered a whole spectrum of standard setting, licencing procedures, licence requirements, monitoring compliance, response to non-compliance in relationship to administrative and prosecutorial action, offences and penalties as well as recommendations for a refocussed environmental enforcement unit. The 'action plan' also specifically recommended the development of a formal enforcement policy for the department.

This brings us to the present. A number of recommendations in the action plan have already been implemented. The Pollution Control Division was restructured in mid 1988 into the Investigation and Compliance branches with a mandate to focus on

enforcement. The reorganization also limited negotiation to the licencing stage and deleted negotiation from enforcement functions. A number of key recommendations still to be implemented include changes to legislative enforcement provisions and the development of a formal enforcement policy. Another important aspect is the recommendation for public review and input to the enforcement policy before it is finalized.

Pollution Control Division staff is currently undergoing investigative training to ensure that comprehensive investigations are carried out in a professional manner. The framework of an enforcement policy has been established and a draft is currently being developed. I would like to show you an overhead of the Enforcement Policy outline and to focus on three key areas:

* (Section 7) The enforcement response section outlines the enforcement options and the criteria to determine which option is applicable.
* (Section 5) The guiding principles which formalize the commitment to firm but fair enforcement carried out in a timely and consistent manner.

* (Section 2) The public role section recognizes the importance of the public not only in providing input to the formulation of policy but also in reporting environmental concerns or incidents by bringing them to the attention of the department.

Here is a brief overview of the enforcement process. Currently one of the primary initiators of investigative action are public complaints which alert us to an environmental problem. Other important initiators of investigations are industrial reports of non-compliance and reporting of uncontrolled release incidents. This first stage of the enforcement process is notification that a contravention of environmental legislation has occurred. At this stage it is strictly an allegation which requires further evaluation.

The second phase of the enforcement process is an investigation. This is carried out to gather evidence in order to determine if an offence has occurred. The facts are established and evidence is developed without prejudging the case. Once the investigation is completed, the Pollution Control Division determines the most applicable enforcement action.

At the third stage, Alberta Environment makes a recommendation to the Attorney General's Department which carries out a further assessment to determine whether the evidence supports the recommended charges.

A parallel option at this point is for the department to take administrative enforcement action in terms of control orders or stop orders. Control orders are not negotiated and outline specific requirements to correct the contravention. This measure is effective in bringing about fast remedial action where the environment is directly affected.

The fourth step of the enforcement process is that charges are laid by the Attorney General's Department.

The fifth and final step in the enforcement process acknowledges the responsibility and authority of the judicial system to decide if the allegation constitutes an offence and to determine the appropriate penalty.

The following aspects are an integral part of our review for enforcement action:

1. A clear establishment of the offence, e.g. what condition of the permit or licence or what specific section of the act or regulations were contravened? It is important to note that not all contraventions can be prosecuted and some may result in a warning or control order.

2. Evidence available to support the enforcement action, i.e., what evidence has been gathered in the investigation to confirm that an offence has in fact occurred?

3. The assessment of due diligence defence. While it is important to recognize that it is up to the courts to accept or reject an operator's due diligence defence, the assessment of due diligence based on a technical investigation can be an important factor in deciding an appropriate enforcement response.

Where are we then in terms of the 1989 record of enforcement action with respect to pulp mills?

In the period January 1 to October 31, 1989, 25 public complaints were received and investigated. Investigations

were also initiated in response to industry contravention and non-compliance reports. The investigations resulted in two control orders being issued to pulp mills; one in January to the Weldwood pulp mill in Hinton with regard to a pH contravention and one to the Millar Western pulp mill in Whitecourt with regard to total suspended solids (TSS) and biological oxygen demand (BOD) contraventions of their licence. Two warning letters were also issued and a number of reported contraventions are still under investigation.

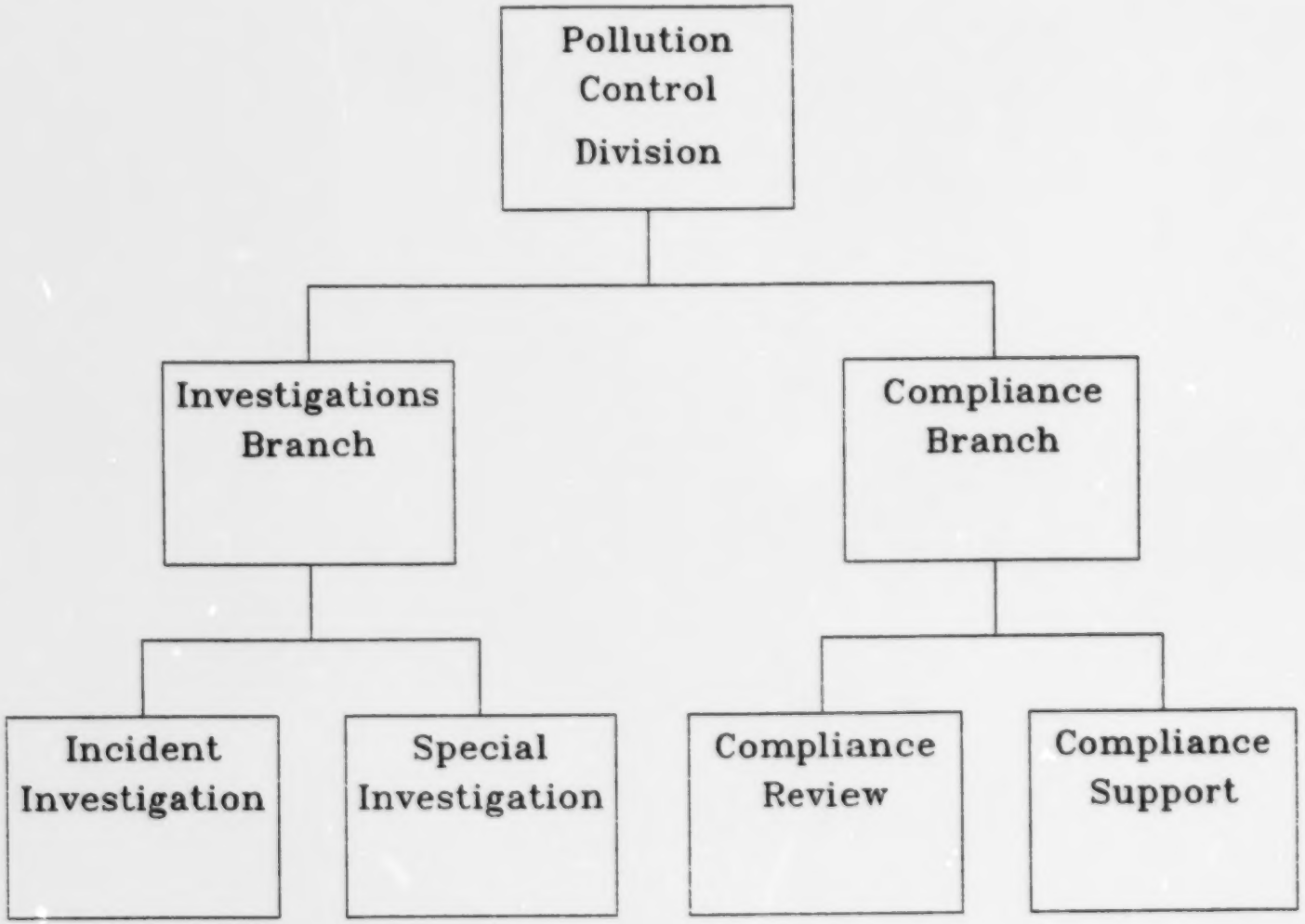
What is our vision and objective for environmental enforcement in the next year?

1. Develop and finalize an environmental protection enforcement policy for Alberta.

2. Recognize and utilize important public input:
   (a) in the review of the enforcement policy
   (b) as the eyes/ears/and noses of the department for reporting of incidents.

3. Continue our commitment to 'tough' but 'fair' enforcement of environmental legislation.

Pollution Control Division



ENFORCEMENT PROCESS

1. Public complaint or reported contravention.
2. Investigation.
3. Recommendation to Attorney General's Department.
4. Charges laid by AG's.
5. Court Decision.

ENVIRONMENTAL PROTECTION
ENFORCEMENT POLICY

1. INTRODUCTION
2. PUBLIC ROLE IN ENFORCEMENT
3. ENFORCEMENT AND ABATEMENT
4. WHAT CONSTITUTES A CONTRAVENTION
5. GUIDING PRINCIPLES FOR ENFORCEMENT
6. ADMINISTRATIVE ROLES AND AUTHORITIES
7. ENFORCEMENT RESPONSE
8. MONITORING, SAMPLING & COMPLIANCE ASSESSMENT
9. EVIDENCE/FILES/CONFIDENTIALITY, ACCESS TO INFORMATION
10. AUDITING OF ENFORCEMENT PROGRAM

ACTION PLAN FOR ENVIRONMENTAL ENFORCEMENT IN ALBERTA

1. STANDARD SETTING
2. AMBIENT AIR QUALITY STANDARDS
3. WATER QUALITY STANDARDS
4. LICENCING PROCEDURES
5. LICENCE REQUIREMENTS
6. MONITORING COMPLIANCE
7. ADMINISTRATION RESPONSE TO NON-COMPLIANCE
8. PROSECUTION
9. OFFENSES AND PENALTIES
10. ENVIRONMENTAL ENFORCEMENT UNIT

EMERGENCY RESPONSE

Protection of the environment in the event of a contaminant release is an important issue confronting the Province of Alberta. Due to the diverse nature of Alberta's topographic features, demographics, economic and resource development, emergency response is a major challenge.

To meet the challenge of providing effective emergency response capabilities to environmental emergencies, Alberta Environment established the Pollution Emergency Response Team (PERT) in 1980. This group is trained and equipped to address environmental spills and emergencies.

The role of this team in an emergency situation is to:

* determine the nature and potential extent of the environmental impact;
* initiate, in conjunction with other emergency response agencies, measures to contain the contaminant and minimize the effects to the environment;
* recommend appropriate mitigative procedures where applicable;
* determine the standard for clean up and evaluate the adequacy of clean up activities;

* initiate an investigation for compliance with legislation, regulations and licence requirements by documenting all findings and actions; and
* enforce the actions imposed on the responsible party by legislation.

When a natural disaster that includes the release of contaminants occurs, PERT becomes part of the government's response to the incident and, during such events, all activities are coordinated by one agency.

PERT is made up of highly trained technical staff who have experience in responding to environmental emergencies affecting air and water contamination, hazardous chemicals and pesticides handling and municipal water and waste treatment. In addition to these areas, the Team has access to other areas of expertise within the department such as air and water monitoring, flow forecasting, river engineering and groundwater, as well as the research capabilities of the Alberta Environmental Centre.

PERT CENTRAL - located in Edmonton - is the command centre for all communications involved in a response to an environmental emergency. On a daily basis, the centre

acts as the receiving point for all public complaints and industry reports. Investigators are dispatched from this centre to respond to incidents/complaints. In the case of an environmental emergency, PERT Central can be operated on a 24-hour basis.

The centre is staffed by trained personnel and provides a focal-point for information collection and dissemination for any response or action. It also contains a library of information on emergency response in Alberta. This information includes individual company emergency response plans, dispersion models, chemical safety data, call down lists for water users and phone lists of government, municipal and other agencies that may be of assistance during an emergency or spill response.

FIELD RESPONSE - Two five-person teams in Calgary and Edmonton and regional staff located throughout Alberta, provide prompt on-site response to most areas of the province. This group has the expertise to handle on-site emergency response and the authority to mobilize all of Alberta Environment's monitoring, sampling and analytical capabilities to identify, contain and clean up a contaminant release. Where necessary, on-site command

posts can be established to coordinate activities and to establish regular contact with PERT Central. The field component operates on a 24-hour basis until a situation is brought under control or stabilized and the appropriate clean up actions undertaken.

This Team concept has served Albertans very well. The Pollution Emergency Response Team concept has evolved and expanded since its inception and an extensive review of our own emergency response procedures and capabilities is currently underway. This continuing improvement and refinement of the system will enhance Alberta Environment's commitment to environmental protection.

OUTSTANDING ISSUES: EIA

Alberta Environment first met with representatives of Crestbrook Forest Industries Ltd. in April 1988 to discuss the scope of their proposed kraft pulp mill project in the general vicinity of the Town of Athabasca.

An Initial Environmental Evaluation was submitted to the government in June 1988. This document provided a preliminary assessment of the impacts of the proposed bleached kraft pulp mill on the water quality of the Athabasca River.

Crestbrook continued to work on definition engineering and water quality modelling during the summer and fall of 1988. A proposed table of contents for the EIA was discussed with Alberta Environment in November 1988. The proposed project was publicly announced December 13, 1988 and Alberta-Pacific Forest Industries Ltd. was requested to prepare an EIA on December 22, 1988.

The results of an interdepartmental review of the company's project description and proposed table of contents for the EIA were conveyed to Alberta-Pacific in March 1989. This review included federal comments and

concerns as transmitted by Environment Canada. Information requirements for the EIA were formally transmitted to Alberta-Pacific March 23, 1989.

The company submitted the EIA to the government and public for review on May 11, 1989. The EIA was reviewed by agencies of the governments of Alberta and Canada. Supplemental information requirements were forwarded to Alberta-Pacific August 30, 1989. Issue areas that needed to be addressed included: site selection, transportation, water supply, effluent management, air emissions, solid waste management, dissolved oxygen, suspended solids, colour, chlorinated organic compounds, dioxins, fish tainting, nutrients, toxicity impacts of aquatic life, hydrogeology, atmospheric, terrestrial, land use and local community impacts, native affairs socio-economic policies and programs, public participation and environmental protection measures.

Alberta-Pacific has filed a number of supplemental information reports with Alberta Environment in response to these issues.

Many of these issues have now been addressed however,

there are still a number of issues outstanding. These include:

Public concern with aquatic life, particularly as it relates to effluent discharge and bio-accumulation in the Peace Athabasca delta has been expressed throughout the EIA review. The EIA does not identify or assess the impact on downstream aquatic life except to point out that effluent will contain such low amounts of chlorinated organics that impacts would not be expected in downstream locations; quantification of these impacts is required by Alberta-Pacific.

The nature and distribution of the fishery is not well documented in the reach of the river between Athabasca and Fort McMurray. In order to assess the impact on this fisheries resource, baseline information could have been collected by the company during the spring and fall spawning seasons of 1989.

Strong assertions have been made by Alberta-Pacific that odours will not be detected beyond one mile from the plant. The frequency and distribution of odour impacts have a degree of uncertainty which is influenced by the

lack of on-site meteorological information. Collection of on-site data by the company over the last 11 months could have been used to improve the certainty of these odour impacts.

Technical and economic considerations have been of prime importance throughout the site selection process. The justification for the identification of the original nine sites that were considered has not been well documented from an environmental perspective. A more detailed environmental impact comparison by the company could help clarify the environmental impacts related to each site.

Finally, Alberta Pacific has not demonstrated how the construction camp would be operated in a manner consistent with the unique needs of the community. Alberta-Pacific has profile information on the Grassland/Prosperity community as well as considerable knowledge based on their consultation program to enable them to provide this demonstration.

SUMMARY

Albertans place a high priority on sound water management. Alberta's overall approach to water management recognizes the fundamental sustaining nature of water to human existance and natural systems. Water flows into, through and out of Alberta and Alberta takes its responsibilities to protect this valuable resource very seriously, for the benefit of Albertans who rely upon our water, but also for the benefit of downstream users beyond our borders. Our commitment to our neighbors is reflected in our actions and our desire to fully cooperate with others is a matter of record.

Alberta Environment has and will continue to place a high priority on the values and views of citizens. One of the major principles that guides our action is that Albertans will have every opportunity to understand and provide advice on decisions affecting our environment. Today's public hearings into the Environmental Impact Assessment of the proposed Alberta Pacific pulp mill development speak to that commitment. The scope and depth of that commitment extends far beyond these hearings and permeates the overall operating philosophy of Alberta Environment.

Examples of our commitment to encourage and facilitate public participation are reflected in our actions to share monitoring information about the state of the environment found within the Athabasca and Peace Rivers. Alberta Environment has embarked upon a process to solicit public views not only at the E.I.A. stage, but during river basin planning through to permit and licensing and monitoring stages. We welcome the assistance of the public in monitoring ongoing operations and are actively developing the concept of environmental liaison committees to provide a focus for citizen participation in the regulation of large developments. Individual citizens are the eyes and ears of Alberta Environment since all Albertans are responsibile for ensuring the protection, improvement and wise use of our environment through their actions as individual citizens.

Alberta Environment is firmly committed to the principle of sustainable development through concrete regulatory actions. Fundamental to sustainable development is the establishment of a broad framework for action such as our river basin planning program.

Alberta Environment is concerned about the persistent

nature of even minute quantities of organo chlorines and has adopted a strategy aimed at minimizing the release of these priority pollutants to the environment and eventually eliminating them. Significant progress is already apparent through a variety of in-mill changes and we are optimistic that the combination of technologies required by the department will see further significant reductions.

Alberta Environment has established a comprehensive program of Environmental Impact Assessments to further test the sustainability criteria at the level of considering individual projects. Clean water is essential for sustainable development and Alberta Environment has examined sustainability closely to determine the threshold limits of the Athabasca River relative to dissolved oxygen.

Alberta Environment fully understands and appreciates the dilemma faced by the Alberta Pacific EIA Review Board in considering the matter of dissolved oxygen since we face the same dilema from a regulator's view. To assist the Board in this regard, Alberta Environment will be continuing to address the matter of licence to operate discharge limits for Weldwood, ANC, AEC and Millar

Western. You have our commitment to ensure that the dissolved oxygen levels in the river will be protected and we have absolutely no intention of licensing these facilities in a manner that does not fully take into consideration new monitoring data regarding predicted low flow impacts.

Alberta Environment is prepared and capable of strictly enforcing licence limits through direct regulatory action. Alberta Environment has changed its enforcement policy to ensure that strict enforcement is operable and has changed its organization to reflect a new priority on enforcement through a restructured and refocussed Pollution Control Division. There will be no tolerance of poor performance from pulp mills and operators that cannot meet licence conditions will face the full force of Alberta's environmental laws. These laws are already among the toughest in Canada and will be strengthened through new legislation.

Alberta Environment is also dedicated to continuing to show leadership in maintaining a leading edge in environmental protection and pulp mill development. We expect the dramatic changes in pulp mill pollution

controls now being implemented in Alberta will continue to be refined and improved upon. Alberta Environment will undertake a broad range of research to ensure that Alberta's mills remain as clean as possible with best achievable technology.

Our goal remains to minimize or eliminate priority pollutants such as organo-chlorines. To ensure that our understanding of the aquatic systems continues to improve, we will examine the performance of the rivers through intensive monitoring and we will ensure that appropriate research is undertaken to confirm that the fate and effect of pollutants does not impair the quality of the environment for use by future generations.